Price War: Power Mac vs. Pentium, Page 39

AUGUST 1994

# MacWorld

THE MACINTOSH® MAGAZINE
$3.95 Canada $4.95

# Power Mac 7100

A ★★★★★★ Winner
for under $2900, Page 58

## Mac Online Guide

- Pick the Right Service
- Select the Best Software
- Download Stock Photos

## Color Printers

16 Inexpensive Models
Lab Tested

08
37772
0 130536 4

# POWER MACINTOSH RUNS FAST WIT
# IN STOCK. JUST WAIT TILL YOU SEE IT

*Offer good only in the 50 United States. © 1994 Microsoft Corporation. All rights reserved. Inside the 50 United States, call (800) 426-9400. For information only: In Canada, call (800) 563-9048. Outside the U.S. and Canada, call your local Micros
Microsoft Corporation. Macintosh is a registered trademark and Power Macintosh is a trademark of Apple Computer, Inc.

# H THE MICROSOFT PROGRAMS NOW WITH OUR PERFORMANCE PACKAGE.

While it's true that the Power Macintosh™ will zip right along with current programs, it'll perform even better with the next version of Microsoft® Office for the Macintosh.®

The programs in the Microsoft Office will not only take advantage of the power and speed of Power Macintosh, they'll also work together. Seamlessly. Effortlessly.

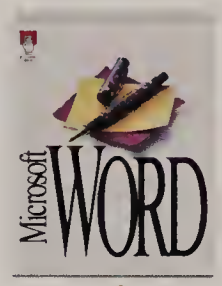
In other words, you'll have a suite of full-featured business programs so well integrated that they act as if they were one program.

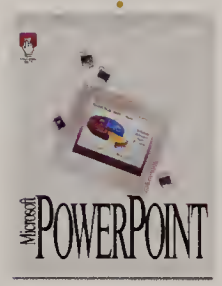
But it doesn't stop there. These programs have built-in intelligence that senses what you want to do and helps you do it.

Isn't this something you want?

If so, you really should consider Microsoft Office. Far and away, it's the best way to get the most out of the new Power Macintosh.

But we warn you, you'd better fasten your seat belt.





*Pick up Microsoft Office for Macintosh now. And we'll send you the new version for Macintosh or Power Macintosh at no charge when they ship in the near future.**

**Microsoft**

bsidiary or (206) 936-8661. Microsoft and PowerPoint are registered trademarks of

You got a Mac. And then a few more. You tied them together. People started sharing. Everything

# Now they're sharing their frustration. With you.

# Time for a Workgroup Server.

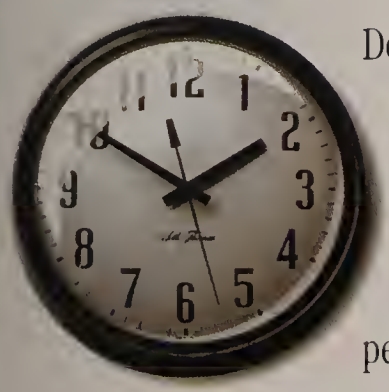
Funny thing about the Macintosh® computer. With little fanfare and an idea known simply as "plug and play," it turned a whole lot of novice users into networkers.

And is it any surprise? All you have to do is plug an inexpensive connector into the back of a Mac,® and you're networked. You can share printers. You can share modems. You can even share files with your peers.

This kind of "peer-to-peer" network is all some workgroups need.

Others, however, soon find they're ready to take the next step: a Workgroup Server dedicated to improving the ebb and flow of vital information.

How do you know if you're ready? Just ask yourself a few simple questions.



Do I have more than five computers tied together in a peer-to-peer network? Is one printer always backlogged while others sit idle? When people share files, are their systems slowing down? Is there confusion about who has the latest data and where it resides?

If you answered yes to any of these questions, it's definitely time to consider a Workgroup Server from Apple.

Workgroup Servers provide a centralized place for users to store and share files. Which means your shared files don't get lost, your systems don't slow down and users always have access to the latest information.

A server also gives you a place to put network applications and services—accounting programs, databases, e-mail and more—for everyone to use.

And that's just the start. With print spooling software, users won't wait forever for your overworked LaserWriter® printers. With FileWave software, you can distribute new programs and upgrades from the server, without trekking from Mac to Mac. With Dantz Retrospect Remote, you can back up every system on the network—both clients and servers—automatically. While with Apple® Remote Access software, your users can access the network from anywhere.

"OK," you say, "but how difficult is it to use a Workgroup Server?" It's as easy as using a Macintosh. All you have to do is connect the components, turn on the power, and you're ready to go.

Choosing the right server for your workgroup is just as easy. We have six models for all kinds of needs, from the Workgroup Servers 60, 80 and 95 to our newest models based on the high-performance PowerPC™ chip: the Workgroup Servers 6150, 8150 and 9150.

No matter which one you choose, you're backed by our expert telephone support, 24 hours a day, seven days a week.

For the name of your nearest authorized Apple reseller, simply pick up the phone and dial 800-538-9696, ext. 430.

Get your hands on a new Workgroup Server today. And discover the power you need most for your workgroup environment. The power to be your best.®

Apple®

© 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, LaserWriter, Mac, Macintosh and "The power to be your best" are registered trademarks of Apple Computer, Inc. PowerPC is a trademark of International Business Machines Corporation, used under license therefrom. Retrospect Remote is a registered trademark of Dantz Development Corporation. FileWave is a registered trademark of Wave Research, Inc.

# Contents

MACWORLD THE MACINTOSH® MAGAZINE AUGUST 1994

## Special Online Issue

All aboard the online express! *Macworld*'s guided tour of all things online brings you advice on new technologies and resources, what works (and what doesn't), how to connect, and where to go once you're there.


**90 Macworld's Guide to Online Services**
BY JOANNA PEARLSTEIN *Macworld* rates five commercial services on features, price, and Internet access.

**94 How to Ride the Internet**
BY JOANNA PEARLSTEIN Strategies for accessing the Internet.

**100 Pick the Right Communications Software**
BY MEL BECKMAN *Macworld* evaluates 11 popular communications packages that will have you zipping along the infobahn in no time.

**102 How to Buy a Modem**
BY CHARLES SEITER Clear advice on choosing the best modem for your needs.

**124 Searching for Stock Photos Online**
BY JIM BENSON Online image databases are revolutionizing the way designers work with stock photography. We evaluate three online image services.

**163 The Desktop Critic**
BY DAVID POGUE First-class bulletin boards.

**167 The Iconoclast**
BY STEVEN LEVY Online shopping misses the point.

*Our definitive guide to online products and services starts on page 90.*

## Features


**108 Color Printers for Every Budget**
BY JIM HEID Macworld Lab tests 16 ink-jet and thermal-wax color printers and finds quality color at bargain prices.


## News


**33 MacBulletin**

**34 News** Taligent's cross-platform OS • Low-cost MultiSync monitor • La Cie's modular drives, and more

**39 Power Mac News** Power Mac, Pentium price comparisons • Late software update • Power Watch: MacWrite Pro, RAM Doubler, and more

**45 New Products**


## Opinion


**19 State of the Mac**
BY ADRIAN MELLO Beyond the success of the Power Mac.

**25 Letters**

**171 Conspicuous Consumer**
BY DEBORAH BRANSCUM Where to turn for Macintosh repair.

**252 Wise Guy**
BY GUY KAWASAKI Creativity between the covers.

*Macworld Lab tests 16 color printers, page 108.*

## Graphics


**118** **News** New Adobe font licensing • SprintScan 35 slide and film scanner • ReadySetGo goes GX, and more

**122** **Expert Graphics**
BY CATHY ABES Graphics professionals share their secrets.


## At Work


**128** **News** FileMaker gears up for the network • Face-lifts for Timeslips, LapTrack • Smarter OCR, and more

**131** **Working Smart**
BY JIM HEID Useful Mac telephone schemes.

**136** **Graphing beyond Excel**
BY CHARLES SEITER In business and science, a graph can show your data to best effect. We pick the winners from 11 professional graphing packages.

**143** **Quick Tips**
BY LON POOLE Tips, tricks, and shortcuts.


## Networks


**150** **News** Faster workgroup server applications • Easy ARA • Network faxing, and more

**152** **Connect Your LANs**
BY MARTHA STRIZICH Want to hook your LANs together without spending a fortune? Public data services are the new way to keep your business in touch.

**157** **PowerBook Notes**
BY CARY LU Answers to frequently asked questions.


## Buyers' Tools


**173** **Editors' Choice**
Top picks from our comparative articles.

**177** **Star Ratings**
More than 300 product-review summaries.

**187** **Streetwise Shopper**
Hardware and software bargains: discounts, bundles, upgrades.


*La Cie's Joule—sleek new modular drives, page 34.*

**14** **How to Contact Macworld**



IDG

**August 1994, Volume 11, Number 8** Macworld (ISSN 0741-8647) is published monthly by Macworld Communications, Inc. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0505. Subscription orders and inquiries should be directed to 303/447-9330. Subscription rates are $30 for 12 issues, $60 for 24 issues, and $90 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add $18 per year for postage for Canada and Mexico subscribers. Add $69 per year for postage to all other countries. Second-class postage paid at San Francisco, California, and at additional mailing offices. **Postmaster:** Send address changes to *Macworld*, P.O. Box 54529, Boulder, CO 80323-4529. Printed in the U.S.A.


**ON THE COVER**
*Photograph by Mark Johann.*

## Reviews


**58** **Power Macintosh 7100/66**
Macintosh computer

**60** **Power Macintosh 8100/80**
Macintosh computer

**61** **Newton MessagePad 110**
Personal digital assistant

**62** **OrangePC Model 200 Series**
PC coprocessor cards

**63** **SoftWindows 1.0**
Windows emulation

**63** **WordPerfect 3.0a**
Power Macintosh update

**65** **MetaFlo'**
Graphics utility

**66** **PowerShare Collaboration Servers**
Collaboration software

**71** **OneWorld Fax**
Fax server

**71** **ProFiles 1.0**
File-management utility

**73** **L-TV Portable; The Presenter Plus Mac/PC**
Video adapters

**73** **L-TV Pro NuBus; Simply TV**
Internal video adapters

**75** **SupraFaxModem 288**
Fax modem

**77** **DiskDoubler 4.0**
File-compression program

**77** **Full Contact 2.01**
Personal information manager

**79** **Scenery Animator 1.0.4**
Landscape software

**81** **Koyn Fractal Studio 2.02**
Educational software

**81** **The Cruncher**
Educational spreadsheet

**83** **PopupFolder**
Finder utility

**83** **DateView 1.0.1**
Calendar/to-do manager

**84** **DeBabelizer Lite 1.0**
Graphics-conversion software

**85** **TimeSquare 1.0**
Scheduling program

**87** **Icon Mania 1.0**
Icon-editing utility

**87** **PowerMerge 2.0**
File-synchronization software

Now! $50 Rebate

# The Epson ES-800C Pro/Mac. A Scanning System So Advanced, There Are Only Two Ways To Improve It.

We talked to the pros when we designed the EPSON ES-800C Pro/Mac to make it the most advanced professional color scanning system in its class. The 1600 dpi ES-800C comes with the full version of Adobe PhotoShop, Kai's Power Tools, one and three pass scanning, dual cpu connectivity, plus built-in color and gamma controls. It's the best equipped, best value professional scanner you can buy.

**EPSON ES-800C PRO/MAC**

*ES-800C Scanner*
*Adobe Photoshop 2.5*
*Kai's Power Tools*
*SCSI cable & terminator*
*Two-way connectivity*
*Built-in Color & Gamma Controls*

*How do you improve on a scanner this great? By adding more free software and a $50 rebate.* Now, for a limited time, buy an EPSON ES-800C Pro/Mac and you'll get a free copy of Astound, the Eddy Award-winning multi-media presentation package, a $399 value, plus a $50 scanner rebate*. That's one advanced scanner deal.

MACUSER EDITORS' CHOICE AWARD 1993 WINNER

Astound 1.0

For more information about the ES-800C Pro/Mac, our other scanners for Macintosh or PCs, or our complete line of lasers, ink jets, and other technologically advanced computer products, visit your local EPSON dealer or call the EPSON Connection (1-800-BUY-EPSON). Ask for the special offer that makes the most advanced scanner in the business even better.

MACWORLD MW ★★★★

* **HOW TO GET YOUR REBATE/SOFTWARE: 1)** Buy an EPSON ES-800C Pro/Mac between 5/1/94 and 7/31/94. **2)** For rebate/software details and form, call the EPSON Connection, 1-800-BUY-EPSON, or see your local EPSON dealer. Note: software value is manufacturer's suggested retail price.

Adobe PhotoShop, Kai's Power Tools and Astound are trademarks or registered trademarks of Adobe Systems, HSC Software, or Gold Disk respectively. EPSON is a registered trademark of SEIKO EPSON CORP. © 1994 EPSON AMERICA, INC., 20770 Madrona Ave., Torrance, CA 90503. For dealer referral or warranty details, call 800-BUY-EPSON (800-289-3776). In Canada, call 800-GO-EPSON. For Latin America, 305-265-0092.

Astound
The only solution for all your presentation needs – today and tomorrow.
• Produce overheads, slides, notes and handouts with more options and greater flexibility
• Add animation, sound and even QuickTime by pointing, clicking and dragging.
• Create training tools and other user-directed presentations with interactivity.
• Distribute your presentations with included royalty-free runtime players for Windows and Macintosh.
• Import Persuasion® and PowerPoint® files, build on your existing investments.
GOLD DISK
Astound™
EPSON ES-800C
MORE FREE SOFTWARE AND A $50 REBATE!
EPSON®

# Somewhere Over Colorado You'll Wish You Had A SlimPack.

Introducing the Battery Technology SlimPack. Providing up to 10 hours of PowerBook power for as low as $169.95.

If you're a PowerBook owner you know that helpless feeling, when your screen goes dim at 35,000 feet and your report goes unfinished.

Now there's a solution to PowerBook power shortages... the SlimPack from Battery Technology. It's provides up to fives times as much usage time as Apple's internal battery. That's about ten hours for owners of black and white PowerBooks and about five hours for color PowerBooks.

The SlimPack works with almost all PowerBooks. And at just 2.5lbs., with a zero footprint design, and LED "fuel gauge", the SlimPack is convenient to use and easy to store. It's affordably priced at just $169.95 for models 100-180c which is about 40% less than similar competitive units. A Duo version sells for $299.95.

All Battery Technology products including the SlimPack, and our popular Extended Power Replacement Battery and Quick Charger/Conditioner can be purchased from leading resellers and mail order houses. For more information call Battery Technology direct at

**1-800-982-8284.**

**Battery Technology Product Pricing**

| ITEM | MODEL# | PRICE |
|---|---|---|
| PB 100 BATTERY | MC-100 | $59.95 |
| PB 140-180c BATTERY | MC-170 | $69.95 |
| CHARGER FOR PB 140-180c | MC-CHR | $129.95 |
| RAPID CHARGER FOR DUO | MC-SC200 | $149.95 |
| AUTO POWER ADAPTOR | MC-AP100 | $99.95 |
| SLIMPACK EXT. BATTERY | MC-180S | $169.95 |
| SLIMPACK DUO | MC-SC200 | $299.95 |
| STARTER PACK (BATTERY/CHARGER) | MC-KIT | $149.95 |

BTI®
BATTERY TECHNOLOGY, INC.

The World Leader in Laptop Power Accessories.

All product names are trademarks or registered trademarks of their respective holders.
Battery Technology, Inc. 5700 Bandini Boulevard, Commerce, California 90040
Tel (213) 728-1874 Fax (213) 728-7596

**Circle 205 on reader service card**



# Macworld

| | |
|---|---|
| PRESIDENT/CEO AND PUBLISHER MACWORLD COMMUNICATIONS, INC. | James E. Martin |
| CHIEF OPERATING OFFICER MACWORLD MAGAZINE | Colin Crawford |
| ASSISTANT TO THE PRESIDENT AND COO | Yuen Yeh |
| DIRECTOR OF FINANCE | Vicki Peilen |
| DIRECTOR OF HUMAN RESOURCES | Shelly Ginenthal |
| DIRECTOR OF CORPORATE INFORMATION SYSTEMS | Walter J. Clegg |
| INFORMATION SYSTEMS MANAGER | Rick Valdez |
| CORPORATE BUSINESS MANAGER | Christina W. Spence |
| ACCOUNTING/OPERATIONS MANAGER | Pat Murphy |
| ACCOUNTING/FACILITIES MANAGER | Michelle Reyes |
| SENIOR FINANCIAL ANALYST | Madeleine Buckingham |

*MACWORLD* is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 194 computer publications in 62 countries. Forty million people read one or more International Data Group publications each month. International Data Group's publications include: **ARGENTINA'S** Computerworld Argentina, Infoworld Argentina; **ASIA'S** Computerworld Hong Kong, PC World Hong Kong, Computerworld Southeast Asia, PC World Singapore, Computerworld Malaysia, PC World Malaysia; **AUSTRALIA'S** Computerworld Australia, Australian PC World, Australian Macworld, IDG Sources, Reseller, Network World, Mobile Business Australia; **AUSTRIA'S** Computerwelt Oesterreich, PC Test; **BELGIUM'S** Data News (CW); **BRAZIL'S** Computerworld, Game Power, Super Game, Gamepro, Mundo IBM, Mundo Unix, PC World; **BULGARIA'S** Computerworld Bulgaria, Ediworld, PC & Mac World Bulgaria, Network World Bulgaria; **CANADA'S** Direct Access, Graduate Computerworld, InfoCanada, Network World Canada; **CHILE'S** Computerworld, Informatica; **COLOMBIA'S** Computerworld Colombia; **CZECH REPUBLIC'S** Computerworld, Elektronika, PC World; **DENMARK'S** CAD/CAM WORLD, Communications World, Computerworld Danmark, LOTUS World, Macintosh Produktkatalog, Macworld Danmark, PC World Danmark, PC World Produktguide, Windows World, **ECUADOR'S** PC World; **EGYPT'S** Computerworld Middle East, PC World Middle East, **FINLAND'S** MikroPC, Tietoviikko, Tietoverkko; **FRANCE'S** Distributique, Golden Mac, InfoPC, Languages & Systems, Le Guide du Monde Informatique, Le Monde Informatique, Telecoms & Reseaux; **GERMANY'S** Computerwoche, Computerwoche Focus, Computerwoche Extra, Computerwoche Karriere, Information Management, Macwelt, Netzwelt, PC Welt, PC Woche, Publish, Unit; **GREECE'S** Infoworld, PC Games; **HUNGARY'S** Alaplap, Computerworld SZT, PC World, PC Virlag, **INDIA'S** Computers & Communications; **IRELAND'S** Computerscope (Computerworld); **ISRAEL'S** Computerworld Israel, PC World Israel; **ITALY'S** Computerworld Italia, Lotus Magazine, Macworld Italia, Networking Italia, PC World Italia; **JAPAN'S** Information Systems World, Computerworld Today, Nikkei Personal Computing (PCW), Macworld Japan, SunWorld Japan, Windows World; **KENYA'S** East African Computer News; **KOREA'S** Computerworld Korea, Macworld Korea, PC World Korea; **MEXICO'S** Compu Edicion, Compu Manufactura, Computacion/Punto de Venta, Computerworld Mexico, MacWorld, Mundo Unix, PC World, Windows, **THE NETHERLANDS'** Computable (CW), Computer! Totaal, LAN Magazine, MacWorld; **NEW ZEALAND'S** Computer Listings, Computerworld New Zealand, New Zealand PC World; **NIGERIA'S** PC World Africa; **NORWAY'S** Computerworld Norge, C/world, Lotusworld Norge, Macworld Norge, Networld, PC World Ekspress, PC World Norge, PC World's Product Guide, Publish World, Student Data, Unix World, Windowsworld, IDG Direct Response, **PANAMA'S** PC World Panama; **PERU'S** Computerworld Peru, PC World, **PEOPLE'S REPUBLIC OF CHINA'S** China Computerworld, China Infoworld, China Network World, PC World China, IDG Shenzhen's Computer News Digest, Electronics International, IDG HIGH TECH Beijing's New Product World, **PHILIPPINES'** Computerworld, PC World, **POLAND'S** Computerworld Poland, PC World/Komputer; **PORTUGAL'S** Cerebro/PC World, Correio Informatico/Computerworld, MacIn, **ROMANIA'S** PC World, Computerworld, **RUSSIA'S** Computerworld-Moscow, Mir-PC, Sety; **SLOVENIA'S** Monitor Magazine, **SOUTH AFRICA'S** Computing S.A., Network World S.A., Computer Mail, **SPAIN'S** Amiga World, Computerworld Espana, Communicaciones World, Macworld Espana, NextWorld, PC World Espana, Publish, Sunworld, Super Juegos Magazine (GamePro); **SWEDEN'S** Attack, ComputerSweden, Corporate Computing, Lokala Natverk/LAN, Lotus World, MAC&PC, Macworld, Mikrodatorn, PC World, Publishing & Design (CAP), Datalngenjoren, Maxi Data, Windows World, **SWITZERLAND'S** Computerworld Schweiz, Macworld Schweiz, PC & Workstation, PC Katalog; **TAIWAN'S** Computerworld Taiwan, Global Computer Express, PC World Taiwan; **THAILAND'S** Thai Computerworld, **TURKEY'S** Computerworld Monitor, Macworld Turkiye, PC World Turkiye, **UKRAINE'S** Computerworld, **UNITED KINGDOM'S** Computing/Computerworld, Connexion/Network World, Lotus Magazine, Macworld, Sunworld, **UNITED STATES'** AmigaWorld, Cable in the Classroom, CD Review, CIO, Computerworld, Desktop Video World, DOS Resource Guide, Electronic Entertainment Magazine, PlayRight, Power PC World, Federal Computer Week, Federal Integrator, GamePro, IDG Books, InfoWorld, InfoWorld Direct, Laser Event, Macworld, Multimedia World, Network World, NeXTWORLD, PC Letter, PC World, Publish, SunWorld, SWAT-Pro, Video Event; **VENEZUELA'S** Computerworld Venezuela, Micro-Computerworld Venezuela, **VIETNAM'S** PC World Vietnam

# CREATIVE FORCES ARE DRAWN TO THE VIEWSONIC 17

Your mind's eye visualizes the finished work and you are drawn to the screen of the **new** ViewSonic 17. This is where perfection is found. The image on the screen is vital to you — not all monitors are created equal. That's why we developed the New Generation ViewSonic 17 color monitor. There is a difference!

The revolutionary super dark screen of the ViewSonic 17 is designed to increase contrast and produce pure, sharp colors. In addition to a vivid, luminescent image, our digitally controlled 17" monitor offers ViewMatch,™ a color control system designed to accurately match the screen to printer output. To customize settings, such as screen size or pincushioning, there is OnView,™ an easy-to-use array of on-screen adjustments. And the monitor supports non-interlaced resolutions up to 1,600 x 1,200 pixels.

The ViewSonic 17 is even equipped with BNC connectors, which allows two systems to be attached to the monitor at the same time. As a matter of fact, the entire line of ViewSonic's 15- through 21-inch New Generation monitors is MAC and PC compatible, and meet Swedish MPR-II standards for low radiation.

**Unleash your creative forces with the new ViewSonic 17 ... and See The Difference!**

20480 Business Parkway Walnut, CA 91789
Tel: (800) 888-8583 or (909) 869-7976 Fax: (909) 869-7958

1" CRT yield 15" to 15" diagonal viewable screens.
All products and brand names are registered trademarks of their respective companies.

**ViewSonic®**
***See The Difference!™***

**Circle 237 on reader service card**

Circle 114 on reader service card



# Macworld

EDITOR-IN-CHIEF Adrian Mello

## EDITORIAL

EXECUTIVE EDITOR Dehorah Branscum
SENIOR EDITOR/FEATURES Dan Muse
SENIOR EDITOR/REVIEWS Carol Person
LAB MANAGER Lauren L. Black
DIRECTOR OF EDITORIAL OPERATIONS Jane Lagas
SENIOR ASSOCIATE EDITOR/FEATURES Galen Gruman
SENIOR ASSOCIATE EDITOR/AT WORK Dan Littman
SENIOR ASSOCIATE EDITOR/GRAPHICS James A. Martin
SENIOR ASSOCIATE EDITOR/NEWS Tom Moran
SENIOR ASSOCIATE EDITOR/FEATURES Charles Piller
ASSOCIATE EDITOR/GRAPHICS Cathy E. Abes
ASSOCIATE EDITOR/REVIEWS Marjorie Baer
ASSOCIATE EDITOR/NETWORKS Elizabeth Dougherty
ASSOCIATE EDITORS/LAB Mark Hurlow, Tim Warner
ASSISTANT EDITORS Suzanne Courteau, Jim Feeley, Joanna Pearlstein
ASSISTANT EDITOR/NEW PRODUCTS Cameron Crotty
ASSISTANT EDITOR/ONLINE Paul J. Devine
ASSISTANT EDITOR/REVIEWS Wendy Sharp
ASSISTANT EDITORS/LAB Matthew R. Clark, Danny Lee
ADMINISTRATIVE ASSISTANTS Matthew Hawn, Lyn Taylor
ASSISTANT TO THE EDITOR-IN-CHIEF Susan P. Grant-Marsh
CONTRIBUTING EDITORS Robert C. Eckhardt, Erfert Fenton, Jim Heid, Guy Kawasaki, Steven Levy, Cary Lu, Deke McClelland, Tom Negrino, David Pogue, Lon Poole, Steve Roth, Charles Seiter, Suzanne Stefanac, Franklin N. Tessler
INTERNATIONAL EDITORS
Osmund Iversen, Australia, 011 61 2 439-5133;
Marianne Fajstrup, Denmark, 011 4536 44 28 00;
Michael Thevenet, France, 011 33 1 49 04 79 00;
Stephan Scherzer, Germany, 011 49 89 3 60860;
Enrico Lotti, Italy, 011 39 2 58 011660;
Osamu Honma, Japan, 011 81 3 5276-0541;
Shin Cho, Korea, 011 82 2 579-8031;
Paul Molenaar, Netherlands, 011 31 23 354554;
Toralv Ostvang, Norway, 011 472 264 7725;
Alvaro Ibariez, Spain, 011 34 1 319 4014;
Nicklas Mattsson, Sweden, 011 46 8667-9180;
Roger Bataillard, Switzerland, 011 41 1 55 1077;
Cemal Balci, Turkey, 011 90 1 279 1180;
Peter Worlock, United Kingdom, 011 4471 831-9252

## COPY EDIT AND EDITORIAL PRODUCTION

MANAGING EDITOR Charles Barrett
ASSISTANT MANAGING EDITOR Ruth Henrich
EDITORIAL PRODUCTION MANAGER Jeff Sacilotto
SENIOR COPY EDITOR Katherine L. Ulrich
COPY EDITORS D. Jacqueline Kan, Paul King
PRODUCTION EDITORS Lisa Brazieal, Doreen Engelmann

## ART AND DESIGN

DESIGN DIRECTOR Dennis McLeod
ART DIRECTOR Joanne Hoffman
SENIOR DESIGNER Leslie Barton
SENIOR DESIGNER/INFORMATIONAL GRAPHICS Arne Hurty
ASSOCIATE ART DIRECTOR Kent Tayenaka
ASSISTANT ART DIRECTOR Sylvia Benvenuti
DESIGNER Hae Yuon Kim
ASSOCIATE DESIGNER Tim Johnson
SENIOR DESIGN ASSOCIATE Martha Katt
DESIGN ASSOCIATE Belinda Chlouber

# EXPLORE the INTERNET!

# FREE

DELPHI is the only major online service to offer you full access to the Internet. And now you can explore this incredible resource with no risk. You get 5 hours of evening/weekend access to try it out for free!

Use DELPHI's Internet mail gateway to exchange messages with over 20 million people at universities, companies, and other online services such as CompuServe and MCI Mail. Download programs and files using **FTP** or connect in real-time to other networks using **Telnet.** You can also meet people on the Internet. **Internet Relay Chat** lets you "talk" with people all over the world and **Usenet News** is the world's largest bulletin board with over 4500 topics!

To help you find the information you want, you'll have access to powerful search utilities such as "Gopher," "Hytelnet" and "WAIS." If you aren't familiar with these terms, don't worry; DELPHI has hundreds of expert online assistants and a large collection of help files, books, programs, and other resources to help get you started.

Over 600 local access numbers are available across the country. Explore DELPHI and the Internet today. You'll be amazed by what you discover.

## FIVE HOUR FREE TRIAL!

**Dial By Modem 1-800-365-4636, Press return until you get a prompt**
**At Username, enter JOINDELPHI. At Password, Enter MCW948**

Offer applies for new members only. A valid credit card is required for immediate access.
Other restrictions apply. Complete details are provided during the toll-free registration.

**Attention Current Internet Users:** See what DELPHI can offer you! Stock quotes, Grolier's Encyclopedia, newswires, and hundreds of other services are just a few keystrokes away. Telnet to delphi.com and enter the username and password above for a free trial.

DELPHI
INTERNET

Questions? Call 1-800-695-4005.
Send e-mail to INFO@delphi.com

**Circle 173 on reader service card**

# AnthroCarts®!

AnthroCarts will knock your socks off! Imagine how great it'll be when you find the perfect furniture for your equipment — just the right size, tough as nails construction and dozens of accessories.

And you'll find our service so real and responsive, you'll get a kick out of ordering direct!

Call for a free catalog!

*Lifetime Warranty.*

*Adjustable for all sizes.*

*Lots of choices.*

**800-325-3841**

10415 SW Tualatin-Sherwood Hwy.
Tualatin, OR 97062
Fax: (800)325-0045

*GSA contract no. GS-OOF-5040A. Available for OEM applications. Prices from $159.00*
*Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.*



# Macworld

## ADVERTISING SALES

| | |
|---|---|
| VICE PRESIDENT/ASSOCIATE PUBLISHER | Shannon D. Dolan (415/243-0505) |
| BUSINESS MANAGER/AD SALES | Lisa Buckingham (415/974-7344) |
| NO. CALIFORNIA (SAN JOSE, SOUTH) | Cherie La France (415/978-3276) |
| SALES ASSOCIATE | Nazy Farhang (415/978-3257) |
| NO. CALIFORNIA (MARIN), WASHINGTON, OREGON, WESTERN CANADA | Stephen McGill (415/978-3155) |
| SALES ASSOCIATE | Edward Ramirez (415/978-3192) |
| SOUTHWEST REGIONAL MANAGER | Nancy Coy (714/250-1307) |
| SO. CALIFORNIA | Molly Shank |
| SALES ASSOCIATE | Selin S. Gahriel |
| EASTERN/MIDWEST REGIONAL MANAGER | Joan Kelly (508/872-8600) |
| NEW ENGLAND, FLORIDA | Paul Bonarrigo |
| SALES ASSOCIATE | Luanne Newman |
| MIDWEST/TEXAS | Lisa Ladle (708/827-4477) |
| SALES ASSOCIATE | Kathy Poppenhagen |
| MID-ATLANTIC/SOUTHEAST | (201/587-0090) |
| SALES ASSOCIATE | Cathy Langhaar |
| MANAGER DIRECT RESPONSE SALES | Beverly Schneider (415/978-3138) |
| ACCOUNT MANAGERS/MAIL ORDER | Marsha K. Bowers (415/974-7413) Wendi A. Smith (415/978-3117) |
| MACWORLD SHOPPER | 800/888-8622 Niki Stranz (415/978-3105), Carol Johnstone (415/978-3152), Shannon Smith (415/974-7414) |

## MACWORLD GLOBAL PRODUCT SUPPORT CENTER

| | |
|---|---|
| DIRECTOR OF MARKETING AND COMMUNICATIONS | Kimberlee A. Luedee |
| TECHNICAL MANAGER | Chip Carman |

## MARKET RESEARCH

| | |
|---|---|
| VICE PRESIDENT/DIRECTOR OF RESEARCH | Gary L. Rocchio |
| MARKET RESEARCH MANAGER | Linda Lawrence |
| RESEARCH SERVICES COORDINATOR | Jason Douglas |

## MARKETING

| | |
|---|---|
| MARKETING DIRECTOR | Cynthia Koral |
| MARKETING MANAGER | Anne Nichols |
| MARKETING COORDINATOR | Rhona Hamilton |

## CIRCULATION

| | |
|---|---|
| DIRECTOR OF CIRCULATION | Angelina Beitia |
| SINGLE-COPY SALES DIRECTOR | George Clark |
| CIRCULATION MANAGER | Lori Hitchcock |
| NEWSSTAND SALES MANAGER | Martin Garchar |
| SUBSCRIPTION MANAGER | Elizabeth Jensen |
| DIRECT MARKETING MANAGER | Jenifer Carini |
| PROMOTION MANAGER | Kelvin Gee |
| NEWSSTAND COORDINATOR | Dalia Schwartz |
| SUBSCRIPTION COORDINATOR | Deirdre Dugan |
| SUBSCRIPTION INQUIRIES | 800/288-6848 |

## PRODUCTION

| | |
|---|---|
| VICE PRESIDENT/DIRECTOR OF MANUFACTURING | Anne Foley |
| PRODUCTION MANAGER | Cynthia Mazzola |
| BILLING INFORMATION MANAGER | So Fong Yip |
| AD TRAFFIC COORDINATOR | Shellie Anderson |
| DTP COORDINATOR | Clayton Haberman |

# Low Prices. No Compromises.

**True Value From A Trusted Source.**

Most computer vendors would lead you to believe that value is nothing more than a low price. At Mirror, we don't compromise quality to give you a great price.

**Expert Engineering You Can Rely On!**

From hard drives to video cards, scanners to monitors, every Mirror product is designed from the ground up to give you the performance you demand and reliability you deserve. All for a price that leaves our competition scratching their heads in wonder. And they aren't the only ones.

**Critically-Acclaimed Value!**

Time and time again, Mirror amazes the toughest critics in the computer press. In November of 1993, MacUser reported that the Mirror Coolscan is "an impressive slide scanner that compares favorably with scanners costing considerably more." That same month, Macworld awarded the Mirror Color Scanner its coveted Editors' Choice award calling it "a bargain." In awarding Mirror an Editors' Choice for our Full-Page Display, Macworld made note of Mirror's "excellent value" (May, 1993).

MACWORLD MW EDITORS' CHOICE

**Toll-free Technical Support.**

What makes our low prices and expert engineering even more of a value is our toll-free technical support number. Whether it's before or after your purchase, we're here to answer any questions you have. And the phone call is on us–toll-free. It's one more reason why people are choosing Mirror for its unbeatable value.

LOVE IT OR RETURN IT 30 DAY SATISFACTION GUARANTEE

**Famous 30-Day Money-Back Guarantee!**

You'll find the same caliber of engineering and value in every product we sell. We'll prove it, too. Simply call Mirror and place your order today. In 30 days, if you aren't standing along side the industry critics and applauding our value, simply return your order for a full refund. No questions asked.

**Toll Free • 24 Hours**

**1-800 643-4142**

Media: MDA

| Product | Price | Storage | Int | Ext |
|---|---|---|---|---|
| Full-Page | $399 | 170 MB (Q) | $199 | $249 |
| Two-Page Monochrome | $499 | 340 MB (Q) | $309 | $369 |
| Two-Page Grayscale | $699 | 520 MB (F) | $549 | $629 |
| 14" Color | $349 | 540 MB (Q) | $519 | $599 |
| 14" Trinitron | $499 | 1.1 GB (I) | $799 | $849 |
| 15" Color Portrait | $799 | 1.1 GB (Q) | $929 | $989 |
| 17" Trinitron | $999 | 1.1 GB (F) | $899 | $949 |
| 20" Color | $1399 | 1.1 GB (S) | $869 | $929 |
| 20" Trinitron | $1999 | 1.9 GB (S) 'Cuda | $1549 | $1649 |
| ProView 21" Color | $2099 | 2.1 GB (I) | $1459 | $1529 |
| Tornado Graphics Card | $699 | 2.4 GB (S) | $1549 | $1649 |
| ChargeCard Accelerator | $599 | 2.4 GB (S) 'Cuda | $1899 | $1999 |
| Tornado & ChargeCard | $1199 | 3.4 GB (S) | $2149 | $2249 |
| 600 dpi Color Scanner | $799 | CD-ROM | n/a | $299 |
| 800 dpi Color Scanner | $999 | 128 MB Optical | n/a | $799 |
| 1200 dpi Color Scanner | $1499 | 2.1 GB DAT | n/a | $799 |
| Coolscan Slide Scanner | $1999 | Removable Drives | | Call |

**MIRROR**

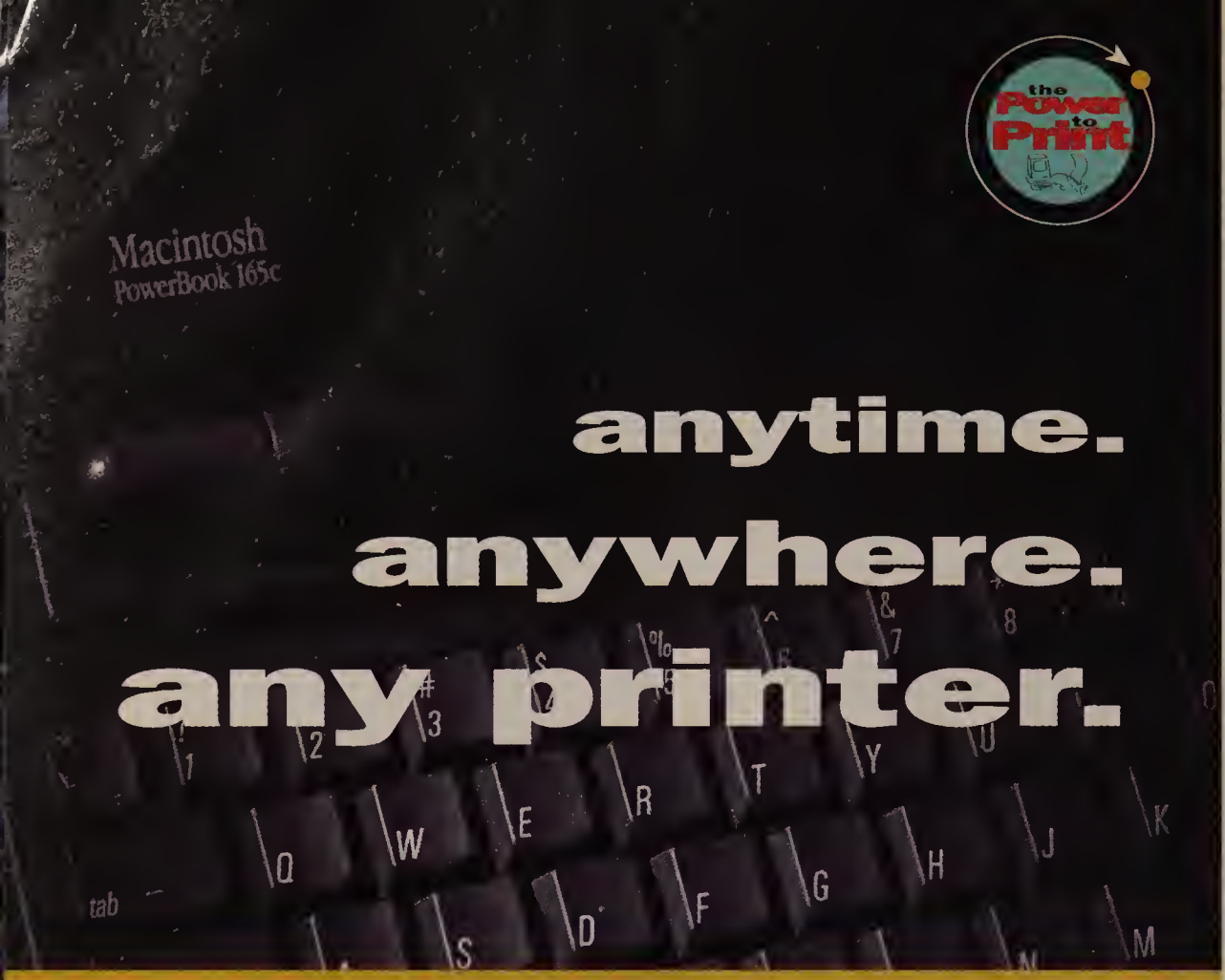
**The Best Thing Next To Your Mac™**

Exceptional selection... award-winning engineering...unbeatable prices... top-notch service...toll-free technical support. There's only one place to get value like this: Mirror.

5198 West 76th Street, Edina, MN 55439 USA Fax: 612-832-0052 Tech Support: 800-323-9285

(C) Copyright 1994, MacUSA, Inc. All rights reserved. All trademarks are property of their respective holders. Prices subject to change without notice. *Does not include shipping

Circle 58 on reader service card



**Now you can print from your Macintosh to over 1,000 PC-compatible printers.**

On the road with your PowerBook? At home using an old PC printer? Sharing PC printers on a network? PowerPrint's cable-and-software package gives you instant access to just about any laser, dot matrix, color, or fast wide-carriage printer.

**PowerPrint costs less than $150.**

And includes features like built-in spooling, scaling, and custom paper sizes. It's compatible with TrueType and Adobe TypeManager fonts.

**Also available in network versions.**

PowerPrint/LT™ for LocalTalk™ networks. PowerPrint/NW™ for Novell NetWare printing services.

**Call 800-330-8233 for more information, or contact your local dealer.**

**Upgrade to 2.5 and Get the Power of Color!**

| | |
|---|---|
| **Why you should upgrade from Grappler or MacPrint, for $75.** | PowerPrint 2.5 is much faster, provides access to color printers like the Canon BJC-600 and the HP Desklet 550C. Plus, features like better quality, background printing and greater compatibility |
| **Current owners of PowerPrint can upgrade for $35.** | And get 32-bit color and grayscale printing, print preview and support for new printers |

MacUser 100 · MW Editors' Choice · yes It runs with NetWare · 4 Apples Mac Home Journal

GDT SOFTWORKS INCORPORATED

GDT Softworks, Inc.
4364 Lougheed Highway
Suite #188
Burnaby BC
Canada V5C 6B7

800-330-8233
604-291-9121
604-291-9699 (fax)
AppleLink:GDT.MKT

All product names are trademarks or registered trademarks of their respective owners.

**PowerPrint™**

THE MACINTOSH PRINTING SOLUTION™

Final users circle 32 on reader service card Dealers circle 42 on reader service card


# Macworld

## HOW TO CONTACT MACWORLD

**SUBSCRIPTION QUESTIONS**
Mainland USA 800/288-6848
All other locations 303/447-9330
or write Subscription Services
P.O. Box 54529
Boulder, CO 80322-4529

**MACWORLD ON AMERICA ONLINE**
*Macworld* subscribers can contact *Macworld* editors online via the Macworld area on America Online. The area features reviews, news, new-product announcements, version information, a database of products, and *Macworld*-sponsored message boards and conferences. Several of our editors log on regularly. To obtain a free America Online software kit, call 800/227-6364, extension 5254.

**MACWORLD IN MICROFORM**
*Macworld* is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346; 313/761-4700.

**BACK ISSUES OF MACWORLD**
Write to Back Issues of *Macworld*, c/o Snyder Newell, Inc., P.O. Box 7046, San Francisco, CA 94120-9727; $6 per issue ($20 overseas). Prepayment in U.S. funds necessary. Make checks and money orders payable to Macworld Magazine.

**MACWORLD EDITORIAL**
MAIL OR COURIER Macworld Communications, Editorial Dept., 5th floor, 501 Second St., San Francisco, CA 94107; 415/243-0505.
AppleLink: Macworld1
CompuServe: 70370, 702 Fax: 415/442-0766
LETTERS TO THE EDITOR All written comments, questions, and suggestions regarding any aspect of the magazine are read by our editor. We reserve the right to edit all submissions; letters must include your name and address. Direct all correspondence (by mail or electronically) to Letters to the Editor.
QUESTIONS AND QUICK TIPS Direct questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to Quick Tips, Lon Poole. Please include your name and address.
CONSUMER ADVOCATE Been burned? Really steamed? Direct your concerns (by mail or electronically) to Conspicuous Consumer, Deborah Branscum.
NEW PRODUCTS AND UPDATES Direct press releases and product announcements (by mail or electronically) and shrink-wrapped software upgrades (by mail or courier) to New Products Editor.
BUGS & TURKEYS Mail in descriptions of turkeys (flaws in conception or design) or bugs (defects or flaws in execution); copies of correspondence with vendor or telephone contact notes (if any); and your telephone number, mailing address, and T-shirt size.
STREETWISE SHOPPER To obtain an application for inclusion of special product promotions in *Streetwise Shopper*, vendors and resellers should contact Charles Barrett (by mail or electronically).
REPRINTS AND PHOTOCOPY PERMISSION Permission will be granted by the copyright owner for those registered with the Copyright Clearance Center (CCC) to photocopy any article herein—for personal or internal reference use *only*—for the flat fee of $1.50 per copy of the article or any part thereof. Specify ISSN 0741-8647 and send payment directly to the CCC at 27 Congress St., Salem, MA 01970. Address requests for reprint orders and for permission to copy editorial for other purposes to Reprints and Permissions, Editorial Dept.
WRITING FOR MACWORLD Do not send us unsolicited manuscripts. If you're interested in writing for *Macworld*, send a stamped, self-addressed envelope along with a request for our writer's guidelines. Direct (by mail) to Writer's Guidelines, Editorial Dept.


FOUNDER David Bunnell
FOUNDING EDITOR Andrew Fluegelman 1943–1985

*Macworld* is a publication of Macworld Communications, Inc. *Macworld* is an independent journal not affiliated with Apple Computer, Inc. *Macworld, Macworld Interactive, Macworld Shopper, MW, MW Lab, MW Shopper, Desktop Critic, Quick Tips, Star Ratings,* and *Conspicuous Consumer* are registered trademarks of International Data Group, Inc. *Power PC World* is a trademark of IDG, Inc. APPLE, the APPLE LOGO, MAC, and MACINTOSH are registered trademarks, and MACLETTER and POWERBOOK are trademarks of Apple Computer, Inc. Printed in the United States of America.

Copyright © 1994 Macworld Communications, Inc. All rights reserved.
*Macworld* is a member of IDG Communications, the world's largest publisher of computer-related information.

BPA INTERNATIONAL · IDG

# Introducing Proxima's Portable 10-Foot Monitors

With Proxima's desktop projection products, you can now project computer and video images as large as 25 feet! And that means you can take advantage of the productivity-enhancing power of your personal computer to make your presentations, business meetings, training, and interactive workgroup sessions more effective.

Simply connect a Proxima Desktop Projector™ to your PC or Mac and instantly deliver dynamic color graphics...crisp data... brilliant video. Or place one of our LCD projection panels on an overhead projector, plug it into your computer, and—presto!—the benefits of the giant screen are yours.

From our MultiMode® and active-matrix Ovation™ projection panels to our dazzling new Desktop Projectors and our remarkable Cyclops® cordless-mouse pointer, Proxima has created a whole new way to showcase your ideas and imagination—starting at less than $1,600!

So call us for more information.

PROXIMA®

PROJECTING THE POWER OF YOUR COMPUTER IN THE MEETING ROOM.℠

CALL NOW TOLL-FREE
**1-800-447-7694**

Proxima Corporation 9440 Carroll Park Drive, San Diego, CA 92121-2298, (619) 457-5500. In Europe: Horsterweg 24, 6191 RX Beek, The Netherlands, +31-43-650 248. Proxima, MultiMode, and Cyclops are registered trademarks and Ovation, Desktop Projector, and Desktop Projection are trademarks of Proxima Corporation. Other trademarks are the property of their respective owners.

**Circle 47 on reader service card**

# LA CIE'S SUMMER

## QUANTUM 3.5" HARD DRIVES

La Cie hard drives with Silverlining™ hard disk management software deliver the best performance and value. La Cie's Tsunami drives are sleek, portable and powerful. With features like switchable active termination for maximum data integrity and up to a five year warranty, Tsunami drives can be used with confidence.

Quantum drives 170MB-540MB : 2 year warranty
Quantum drives 1080MB & up : 5 year warranty

| Capacity | Internal | Tsunami |
|---|---|---|
| 170MB | $199 | $259 |
| 270MB | $269 | $329 |
| 340MB | $299 | $359 |
| HOT! 540MB | $399 | $499 |
| HOT! 1080MB | $749 | $849 |
| NEW! 1400MB | $1099 | $1159 |
| 1650MB S | $1979 | $2039 |
| 1800MB | $1199 | $1259 |

| Capacity | Internal | Tsunami |
|---|---|---|
| 2000MB S | $1919 | $1979 |
| 2050MB S | $2269 | $2329 |

S=Seagate mechanism (1 year warranty)

### PowerBook Drives (2.5" Internal)

| | |
|---|---|
| 85MB | $199 |
| 170MB | $259 |
| 256MB | $349 |

LaserWriter 630 installation kit available

## ZFP REMOVABLE MEDIA SOLUTIONS

For reliability and quality in removable media choose La Cie. Our SyQuest drives offer capacities from 88MB to 270MB. Our CD-ROM drive supports both single and double speed data transfer, plus Photo CD. Our new optical drive offers quiet, reliable operation with cost-effective media. Protect your valuable data with our high-capacity DAT drives. For economical back-up for smaller capacities, try our TEAC tape drives. We have your selection. External drives are shipped in zero-footprint cases.

### SyQuest Drives

| Drive | Internal | External |
|---|---|---|
| 88C MB 5.25" | $399 | $459 |
| 200MB 5.25" | $559 | $599 |
| HOT! 105MB 3.5" | $349 | |
| HOT! 270MB 3.5" | $599 | |

| | 44MB | 88MB | 105MB | 270MB | 200MB |
|---|---|---|---|---|---|
| Cartridges | $69 | $99 | $79 | $99 | $109 |

Each drive comes with Silverlining™ and one free SyQuest cartridge.

### CD-ROM Drives

| Drive | External |
|---|---|
| Toshiba Dual Speed | $639 |

### Optical Drives

| Drive | Internal |
|---|---|
| 230MB NEW! | $1009 |
| 230MB Cartridge | $59 |

Each drive comes with Silverlining™ and one free 3.5" optical cartridge.

### DAT Drives

| Drive | Internal | External |
|---|---|---|
| HOT! 5.0GB DAT | $1099 | $1159 |
| TurboDAT | $1299 | $1359 |

### Tape Drives

| Drive | Internal | External |
|---|---|---|
| 155MB | | $569 |
| 600MB | $729 | $789 |

Each drive comes with Retrospect™ and one free DAT or TEAC tape cartridge.

*Call for details on terms, conditions, limited money back guarantee (shipping not included), warranty and free offers. Comparisons may not apply to all vendor products, check specifications. Prices do not include shipping and only apply to products shipped within the continental United States. International customers must pay for all shipping charges. Add sales tax where applicable. Joule, ZFP, Tsunami, PocketDrive, PocketDock, Silverscanner, Silverscan, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd., a Quantum Company. FORTUNE 500 is a registered trademark of the Time Inc. Magazine Company. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or recourse. © Copyright 1994 La Cie, Ltd. 8700 SW Creekside Place, Beaverton, OR 97005. Phone: (503) 520-9000, Fax: (503) 520-9100. All rights reserved. Printed in U.S.A.

# CLEARANCE SALE!

## CLOSEOUTS!

## HURRY! ACT NOW!

We are making room for the new releases by offering closeout prices on these popular hard drive models. These prices won't last long! Quantities are limited!

This first quality merchandise carries a **ONE YEAR WARRANTY** and includes **SILVERLINING** hard disk management software ($149.00 value).

### Closeout External Hard Drives

| Capacity | External |
|---|---|
| 40MB | $89 |
| 80MB | $119 |
| 100MB | $149 |
| 120MB | $199 |
| 200MB | $249 |
| 400MB | $369 |
| 525MB | $449 |
| 1000MB | $799 |
| 1200MB | $929 |

*Drive enclosures vary.

Every drive also includes owners manual, necessary cables, Apple System software and a generous collection of shareware.

### The La Cie Advantage

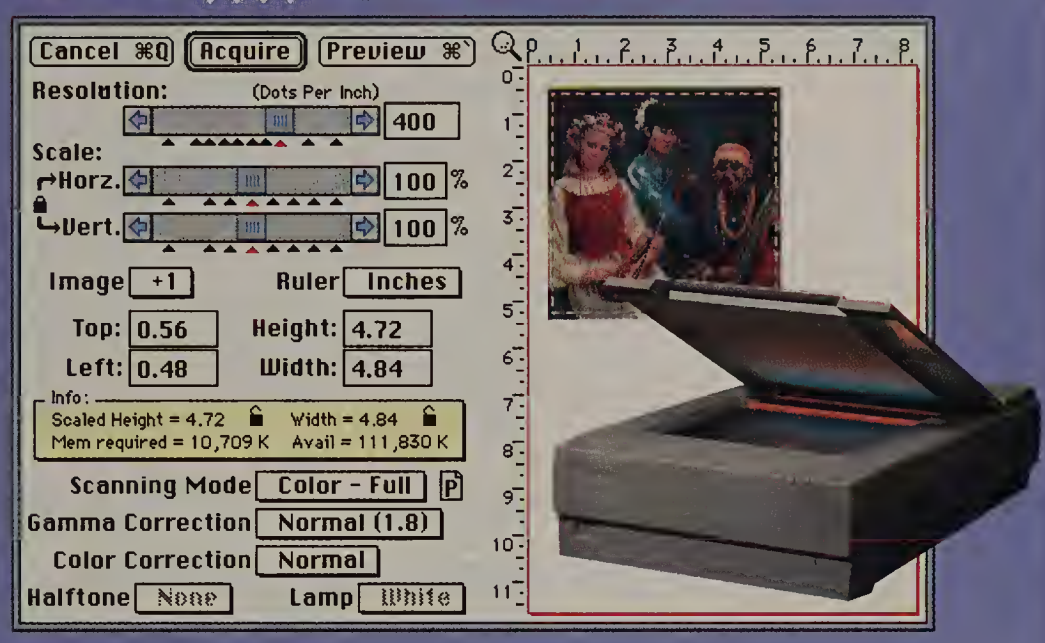
- Silverlining™ Disk Management Software
- Unlimited TOLL-FREE Technical Support
- 30 Day Money Back Guarantee
- All Drives Burned In and Tested
- Double Shielded SCSI Cables
- FCC*, UL, TUV, VDE & CSA Approved
- Ready to Plug and Play
- Valuable Warranties

## COLOR SCANNING SOLUTIONS

### SILVERSCANNER II

As low as **$1599**

*"...Fast and a pleasure to use. ...Produced high-quality printed images with good resolution, and its documentation was tops."*
*Macworld, November 1993*




Silverscanner II makes scanning as quick, painless and productive as possible. With features like dynamic color preview (16 sec.), magnify in preview, proof in preview, savable scan settings, up to 400% scaling in 1% steps and up to 1600 dpi in 1 dpi steps—all in one pass. It's easy for the beginner and powerful for the advanced user. And it's Macworld's Editor's Choice.

*Transparency Attachment*

*Sheet Feeder Attachment*

*All Silverscanners come with our powerful Silverscan software, Color It! image editing software and Read-It O.C.R. Pro.*

| | |
|---|---|
| Basic Bundle | $1599 |
| Basic Bundle Plus Cachet | $1899 |
| Bundle Plus Cachet & ColorStudio | $1999 |
| Bundle Plus Photoshop* | $1999 |
| Optional Transparency Attachment | HOT! $799 |
| Optional Sheet Feeder Attachment | HOT! $499 |

*While supplies last. Does not include Color It!

To order or for more information, call toll-free

**800-999-0182**

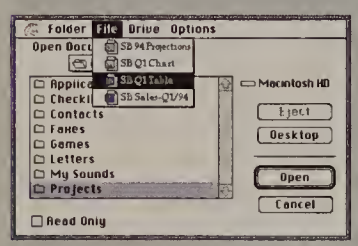
Mon.-Fri. 5a.m.-7p.m. & Sat. 8a.m.-noon PST
International 503-520-9000 Fax 503-520-9100 (24 hrs.)
UK 0800-89-3025 Australia 0014-800-123-007
VISA, MasterCard, C.O.D. and approved purchase orders accepted.*

Circle 52 on reader service card

# The critics would tell you Now Utilities makes your Mac faster and easier to use.

# That is, if they weren't still speechless.

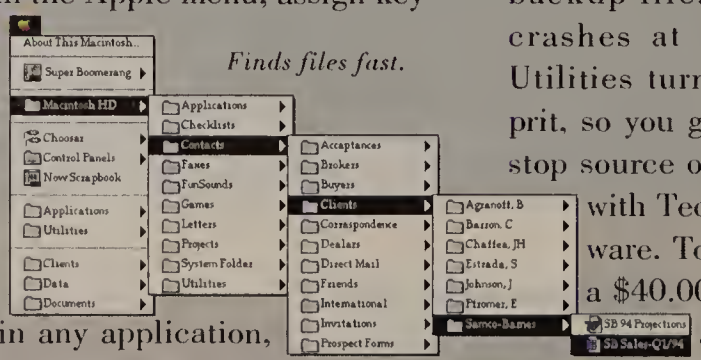
Now Utilities has won so many top awards lately, the critics almost seem awestruck. But when they do speak, you'll find their comments echo those of author/consultant Bob LeVitus, who calls Now Utilities "a must have for any serious System 7 user." Why all the fanfare? Because Now Utilities makes your Macintosh so much faster and easier to use.




*Easy instant access.*

## Saves time.

Now Utilities saves time by giving you instant access to frequently used files and folders. No more time wasted digging through endless folders in the Finder. You navigate your hard drive faster because you can open items directly from submenus in the Apple menu, assign keyboard shortcuts to any menu item, and locate misplaced files in a flash. Even if they've been compressed or archived. What's more, you can reuse boilerplate items of any type in any application, and organize, view and store graphics, text, sounds and QuickTime movies.




*Finds files fast.*

## More control.

Now Utilities puts you in control. If you use Times the most, just drag it to the top of the Font menu. Fonts appear in their actual typefaces, so you choose the right font the first time. You can also arrange extensions and control panels in the order they work best, and link together extensions that require each other.

## Keeps you going.

No more lost work if you lose power: Now Utilities automatically saves your work at any interval you specify. You can even save every keystroke to a special backup file. If your Mac crashes at startup, Now Utilities turns off the culprit, so you get back up and running. It's even a one-stop source of system information, perfect for dealing with Tech Support questions for any of your software. To order Now Utilities today for just $89.95*, a $40.00 savings off the list price, call us directly at **1-800-237-2078.** Or see your local reseller. We're certain you'll become a satisfied critic yourself.

*Puts you in control.*

Now Software

**Dealer prices may vary. For 50-packs and site licensing information call 503-237-3611, ext.131. © Now Software, Inc., 921 SW Washington, Suite 500, Portland, Oregon 97205-2823.*

**InfoFAX**

Please see page 189 for instructions.

BY ADRIAN MELLO

# Beyond the Power Macs

*Charting a course for Apple's continued success*

UNDER THE SURFACE OF THE Macintosh market the twin streams of optimism and doubt flow perpetually. The brilliance and refinement of the Macintosh design continue to inspire users. At the same time, the foreboding mass of the PC market, roughly ten times the size of the Mac market, always seems to raise doubts about the Mac's long-term survival. Ten years have passed since the Mac's introduction, and these currents continue to ebb and flow. The introduction of the Power Macs is a major milestone. It's time to reexamine the challenges facing Apple.

### The Power Mac Success

Ninety days after the introduction of the Power Macs, it appears that Apple has done a phenomenal job of managing the transition to the PowerPC architecture. The machines are selling extremely well, and Apple has by and large kept up with demand. The Power Macs offer an unprecedented price/performance value. According to a *Macworld* price survey, two of the three Power Mac models (the 6100/60 and 7100/66) meet or exceed the price/performance of similarly configured Intel Pentium–based PCs (see *Power Mac News*, this issue). And there are no major software-compatibility problems, a remarkable achievement considering the changeover to RISC. This is the first time a mainstream personal computer platform has converted architectures and maintained the usability of and investment in the installed base of applications. By early autumn most major Mac applications will be available in native Power PC versions, which means more users will buy Power Macs without hesitation. Furthermore, by successfully partnering with IBM and Motorola to create the PowerPC processor family, Apple has demonstrated that it can build and sustain strategic alliances of a scale necessary for its future survival.

But despite the reinvigorated hope that the PowerPC has provided for the Macintosh, more challenges lie ahead. And since optimism and doubt about the Mac go hand in hand, let's anticipate some of the doubts. The impending introduction of Chicago (the next version of Microsoft Windows) will test whether the Mac offers enough unique value to users for them to swim against the DOS/Windows tide. As always, Mac and PC users will spend many fruitless hours arguing their convictions. What must Apple do to put these arguments to rest? The answer is not new: Apple must continue its quest to significantly increase its market share while strengthening the unique advantages of the Macintosh.

### Licensing—Again

The perennial doubts about the Mac's survival continue because there are so many more DOS and Windows machines. To lessen doubts and gain leverage in the marketplace, Apple must make two major moves to increase its percentage of the market. The first move is to work toward a standard hardware platform, and the second is to license the Mac Operating System. It would have been a mistake for Apple to have licensed the Mac OS in the last few years, because the company was not prepared to live on lower margins and could not have withstood competition from less-expensive Mac clones. In hindsight, Apple's previous opportunity to license was three or four years ago, before Windows had really established itself, and the Mac was still unique. But now that Apple has cut its operating costs, dropped the Mac's prices, and improved the Mac's performance, the company has another opportunity to license the Mac, and it must take the plunge in a big way. Although there are still some compelling financial reasons not to create competition by licensing the Mac OS, the fear of lowered profits should be offset by the opportunity to be a survivor in the market-share wars.

To create a standard hardware platform, Apple needs to work closely with IBM on the PReP specification for PowerPC-based microcomputers, to make sure that complete Macintosh capability can be added to PReP-compliant machines. Sources inside and close to the two companies indicate that these efforts are continuing. Both companies stand to benefit from promoting broad support for a PowerPC-based platform. The result of these two major players' combined efforts in the PC market will be that people will listen and reconsider this alternative to the Intel-based platform. IBM is also more capable of selling into major corporations, which would complement Apple's sales and add key customers to the installed base. On the second point, Apple should also offer IBM an OS license that's attractive enough to overcome any Big Blue reluctance to sell Macintosh OS–based machines to its business customers. Increasing the number of PReP-compliant computers doesn't guarantee that these machines will all be running the Macintosh OS. However, the Mac OS is the only operating system that has a large number of users and mainstream desktop applications and can run on the PowerPC. This gives Apple—and would give IBM—a big advantage.

*continues*

GLENN MITSUI/STUDIO MD

Apple should also license its OS to one leading PC maker in addition to IBM. Apple doesn't have to license to everyone right away, but sewing up a second license with a firm like Compaq or Dell would greatly affect the perception of the Macintosh architecture and provide access to new customers. Apple will probably have to offer a very attractive deal to this company to convince it to invest in a new market, but Apple should do whatever it takes. Licensing a major clone-maker besides IBM would hold the attention of new customers and developers. The two main dangers are that Apple would lose some sales, and licensing would complicate the evolution of Apple's technology. But Apple would also gain (licensed) sales it would not have otherwise made: it must be willing to lose some hardware sales, in order to grow its market overall. It is now time for Apple to make a bold move and embrace some risk to boost its momentum.


# UNFORGETTABLE.

*Image shown is an actual nVIEW LCD image.*

## THE *n*VIEW® Z SERIES.

They won't forget your message. You won't forget the applause. Project your next presentation directly from your computer in big, bold color images with *n*VIEW's new line of LCD projection panels.

Sleek, feather-light panels that are so easy to use, yet so durable, you can deliver presentations anywhere, anytime. With impact.

All-in-one projection panels are easy to setup with built-in audio, unique Presentation Control and the versatility to connect up to four sources simultaneously.

See it. Hear it. Feel it. Unforgettable presentations everytime.

*Enjoy the applause!*

For more information call **1-800-736-8439** or **804-873-1354**.

*n*VIEW

VISIONARY DISPLAY TECHNOLOGIES

nVIEW products are manufactured under U.S. Patent #4,763,993; #4,976,536; #5,153,621; #5,150,238; #5,277,871; and 5,255,029. Other and foreign patents pending. nVIEW and ViewFrame are registered trademarks and MediaPro, Luminator and nSIGHT are trademarks of nVIEW Corporation.

**Circle 117 on reader service card**


### Innovation

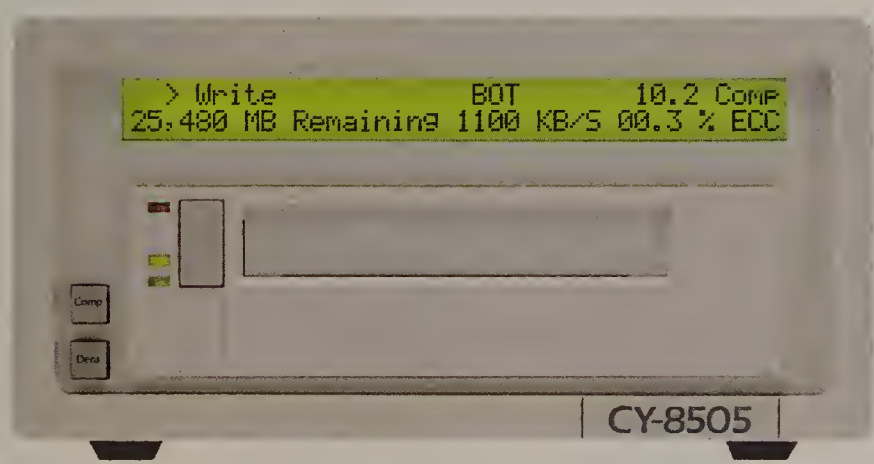
Whatever Apple does, it must maintain the identity of the Macintosh. The Mac has always been unique, special enough that people are willing to go against the tide and buy one. There is tremendous pressure to buy the same system that most other people use. For instance, if you work in a large organization that uses mostly DOS and Windows computers, your MIS manager probably would rather not have to support Macs. As long as Apple owns a significantly smaller share, it needs to differentiate the Mac with unique features. Otherwise users and companies will likely migrate to the most commonly used platform.

The problem is that the Mac is not as obviously different as it once was. People who haven't spent much time with a Mac can't see a big difference between Windows and the Mac (anyone who uses the acronym GUI—pronounced *gooey*—is suspect). With the introduction of the Chicago version of Windows, the distinction between the Mac and Windows interfaces will likely blur even further. You have to spend some time using a Mac to appreciate the difference in quality. Then major differences in usability become apparent. But the difference is no longer evident at a glance, and both share many of the same applications.

Apple must evolve the Mac so that customers can tell at a glance that it is unique. This will require an interface and applications that provide an engaging new dimension. Apple must integrate video and sound into the system so thoroughly that users interact with them as second nature—not simply as novelties or specialized applications. Apple should also design the Mac to be the preeminent platform for communications. People are spending an increasing percentage of their time managing E-mail, faxes, voice mail, online communications, presentations, file transfers, and other forms of communication. If the Mac were clearly better at unifying and simplifying all of this activity it would have a big advantage.

Perhaps most important of all, Apple must convince developers that the Mac offers unique opportunities for success. In the end it will be the creativity and vision of developers that drive the next wave of compelling applications. The developers must have the proper tools and a foundation upon which they can innovate. Instead of spending countless dollars on ancillary businesses such as the Newton, Apple should commit major funds to encourage and support its Macintosh developers. They have always been a key to Apple's success, and they are the likely source of Apple's long-term survival. m

# OUR 25 GB TAPE DRIVE JUST HIT A NEW HEIGHT.




It's smaller; yet our new CY-8505 backs up the largest Macintosh computer systems and networks, unattended.

How? Optional data compression boosts the 5 GB capacity to up to 25 GB. And it's fast – able to write data at speeds of up to 90 MB per minute. Such high performance means huge savings in manhours and media costs. Best of all, the MTBF rate of 80,000 hours gives you data reliability you can depend on.

The CY-8505 features software that lets you schedule full or incremental backups to run any time, day or night. A directory of files is stored on the disk, making it fast and easy to restore. A backlit status display gives you command under execution, compression ratio, transfer rate, tape remaining and more in a clear, easy to read format.

In short, you won't find a more advanced, more reliable solution on the market.

What's more, we back this turnkey solution with a two year warranty that includes responsive service and support from our in-house staff.

**TRUE COMPATIBILITY WITH**

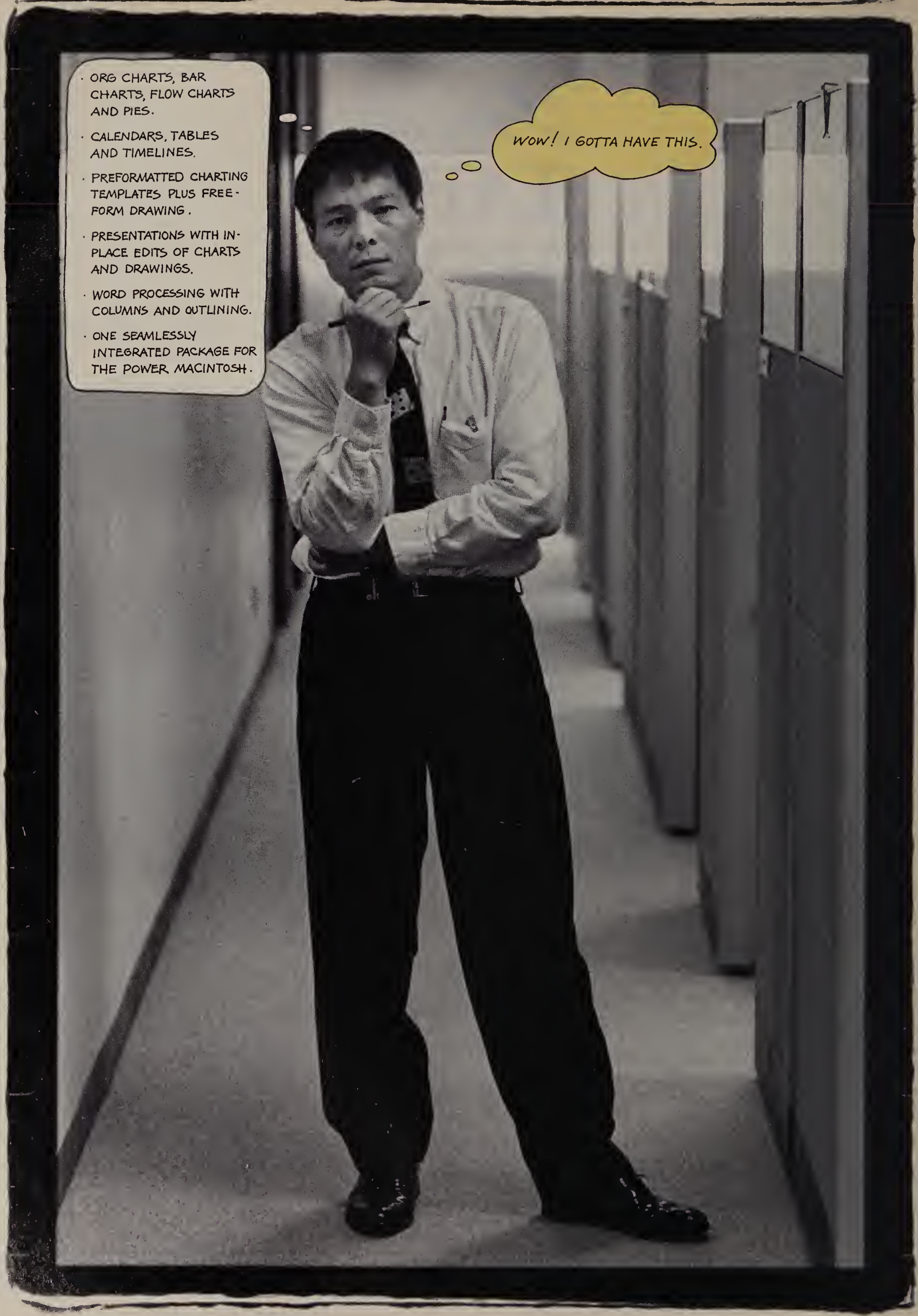
| | | | | | | |
|---|---|---|---|---|---|---|
| | | | ICL | Novell | Prime | Texas Instruments |
| | | | Intergraph | OS/2 | Pyramid | Unisys |
| Alliant | AT&T | DEC | Macintosh | PS/2 | Sequent | Ultimate |
| Alpha Micro | Basic-4 | Gould/Encore | McDonnell Douglas | Parallel Port | Silicon Graphics | Wang |
| Altos | Concurrent | HP | Motorola | Pertec | STC | *— and more* |
| Apollo | Convergent | IBM | NCR | PICK | Stratus | |
| Arix | DataGeneral | IBM PC | NeXT | Plexus | Sun | |

For more information, call today at **(804) 873-9000.**

CONTEMPORARY
**CYBERNETICS**

Rock Landing Corporate Center • 11846 Rock Landing • Newport News, VA 23606 • Fax (804) 873-8836

**Circle 188 on reader service card**


· ORG CHARTS, BAR CHARTS, FLOW CHARTS AND PIES.
· CALENDARS, TABLES AND TIMELINES.
· PREFORMATTED CHARTING TEMPLATES PLUS FREE-FORM DRAWING.
· PRESENTATIONS WITH IN-PLACE EDITS OF CHARTS AND DRAWINGS.
· WORD PROCESSING WITH COLUMNS AND OUTLINING.
· ONE SEAMLESSLY INTEGRATED PACKAGE FOR THE POWER MACINTOSH.
WOW! I GOTTA HAVE THIS.

# Think of it as a whole new way of looking at your business.

Some people look at business and see an endless progression of boring, unproductive meetings.

Others look at it and see an endless progression of opportunities. Opportunities to build consensus between colleagues. To sell new ideas. And advance their careers.

Which way do you see it?

That could depend on the tools you use to prepare for those meetings. Which is a good reason to look at ClarisImpact™ software from Claris. And at the new Power Macintosh™ computers from Apple.

**It's eight packages in one.**

As you've probably heard, the Power Macintosh paves the way for a new generation of powerful business applications.

*Powered by the new PowerPC chip, Power Macintosh computers run blazingly fast, while providing the expandability, compatibility and AV options you need to embrace the future, today.*

Applications like ClarisImpact 1.0.

What makes it so powerful? For starters, buying ClarisImpact is like buying eight sophisticated business graphics programs for the price of one.

Just fire it up, and you can create org charts to document the ever-changing corporate hierarchy. And create flow charts to simplify the most complex of processes.

CLARIS
Simply powerful software™

You can build timelines to help everyone get their work done on time. Create calendars to help workgroups coordinate that time. Draw pictures more powerful than words. Cook up pie charts. Build bar charts. And more.

You can even build on-screen presentations, slides, handouts and overheads.

And refine your reports with the integrated, full-featured word processor.

**It's one of a kind.**

Unlike other business graphics solutions, ClarisImpact is fully integrated. Which means combining text and graphics is a snap. Editing your images is every bit as easy—you never even have to leave the document you're working on.

Since you're using just one program, you only have to learn one user interface.

And because ClarisImpact was designed for businesspeople, not artists, it includes 2,400 useful clip art images and a wide variety of preformatted templates to help you make your points most effectively.

No other business package gives you so much. For that matter, no package of its kind is optimized for the Power Macintosh, either.

So you can get everything done faster. And easier. The Power Macintosh way.

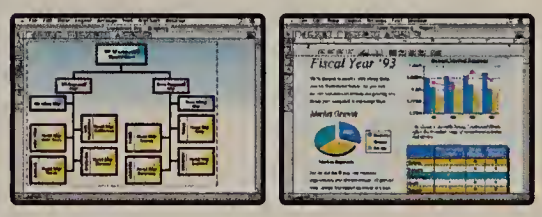
**It's Power Macintosh fast.**

As you'd expect from any computer named Macintosh®, the Power Macintosh runs thousands of powerful, off-the-shelf business programs.

But that's just the beginning.

At the heart of every Power Macintosh is a PowerPC™ 601 microprocessor, the first of a new family of ultra-high-performance RISC chips developed in a unique collaboration between Apple, IBM and Motorola.

Which means software rewritten to take advantage of this chip runs blazingly fast—faster than the same software would run on a Pentium-based PC.*




*With eight charts and graphics modules in one integrated package, ClarisImpact gives you everything you need to make your business look its best.*

Which also means ClarisImpact running on a Power Macintosh is, quite simply, one of the fastest business graphics packages you can find.

To try ClarisImpact, call Claris at 800-544-8554, ext. 322, for a free demo disk.†

For the name of your nearest authorized Apple reseller, call 800-732-3131, ext. 600. And discover the power in the new Power Macintosh. The power to be your best.®

Apple®

**Introducing ClarisImpact for Power Macintosh.**

*Based on an April 1994 performance study by Ingram Laboratories. Allow 4-6 weeks for shipping. ©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Macintosh and "The power to be your best" are registered trademarks of Apple Computer, Inc. Power Macintosh is a trademark of Apple Computer, Inc. PowerPC is a trademark of International Business Machines Corporation, used under license therefrom. Claris is a registered trademark and ClarisImpact, "Simply powerful software" and the ClarisImpact design are trademarks of the Claris Corporation.*

*Newton connects.* When you carry a MessagePad™ 110, the new Newton® communications assistant from Apple, you carry the power that comes from having information at your fingertips. Which means no matter where you go, you always have access to the facts you need, at the moment you need them.

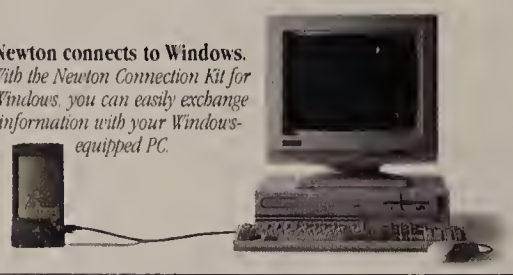
With the Newton Connection Kit 2.0 for Macintosh,® you can exchange information with your Macintosh, as well as with a range of popular Mac® software, such as ACT! contact manager, Lotus 1-2-3, Excel and Microsoft Works.*

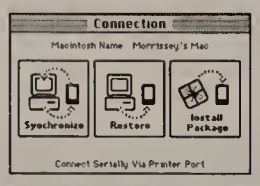
So now you can do things like reference sales leads from Dynodex and work with data created in Microsoft Word, all from the palm of your hand. And if you're working on a PC running Windows, the Newton Connection Kit 2.0 for Windows will allow you to easily do the same with all your current Windows applications.**

To find out more, call 800-365-3690, ext. 100, for the Newton dealer near you. Or check out an on-line service for the interactive demo found on the Newton forum.† Either way, you'll find that instead of giving you more technology, Newton gives you something you can really use: help.

*Newton. It's there when you need it.*

**Newton connects to Windows.**
*With the Newton Connection Kit for Windows, you can easily exchange information with your Windows-equipped PC.*






*Downloading, updating and backing up information between your Newton and your computer is as easy as plugging in.*

**Newton connects to Macintosh.**
*The Newton Connection Kit lets you work with your Macintosh via serial connection or your AppleTalk® network.*

*MacLinkPlus Library, a product of DataViz, Inc. **Available summer 1994. ConversionsPlus Library, a product of DataViz, Inc. †Look for the on-line Newton demonstration on the following services: AppleLink, America Online, CompuServe and the Internet. In Canada, call 800-665-2775, ext. 910, for information. ©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, AppleLink, AppleTalk, Mac, Macintosh and Newton are registered trademarks of Apple Computer, Inc. The lightbulb logo and MessagePad are trademarks of Apple Computer, Inc. ACT! is a registered trademark of Symantec Corporation. Dynodex is a registered trademark of Portfolio Software, Inc. Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation. Microsoft is a registered trademark of Microsoft Corporation.

AUGUST 1994

# Letters

## On Copyright

OUCH! A NOTICEABLE OMISSION from the "How to Avoid Copyright Conundrums" sidebar regarding photographic images hurt ("Are You Breaking the Law?," May 1994). If your project required music with vocals, would you sing it yourself because you own a cassette recorder? Would you make up your own typeface because you know how to write letters of the alphabet? Or print a brochure yourself because you have a copier? Yet you advise readers that the next time they need a photograph as a source for an illustration, they should shoot it themselves with a 35mm camera. Casual familiarity with common devices imparts neither technical nor creative proficiency.

How about this helpful suggestion instead: Hire a real photographer! Your copyright usage needs can be a part of the discussion right from the start, and a good professional photographer will deliver professional results.

*Peter Billard*
*Glastonbury, Connecticut*

Undoubtedly, there are many situations in which you need the services of a professional photographer. On the other hand, I spoke to several illustrators who have begun taking their own photos of simple objects—a bridge, a park bench, a boat—and incorporating and manipulating those images into larger, computer-generated illustrations. To follow Mr. Billard's line of comparison, hiring a professional photographer, when all you need is a usable image, is like hiring an accountant to fill out the 1040EZ form. —James A. Martin

I FOUND YOUR ARTICLE ON THE USE of copyrighted material (a subject that has mostly been overlooked by the computer media) interesting. You wrote that "depending on how an image from an old magazine is used, the likelihood that someone would recognize the original work and contest its reuse today is probably low." It is very distressing to me to hear that it is a bad idea to steal someone's work only if you are likely to be caught.

The law is clear: a photographer's work is covered under copyright from the moment the photographer presses the button. Like most photographers, I enjoy seeing my work in print, and therefore my usage prices are usually reasonable. It is certainly not a game to see if you can use someone else's work without getting caught.

Thanks for your article—it's a start.

*Ray Hunold*
*San Francisco, California*

I quoted experts who believe it's unlikely that an insignificant portion of an image lifted from an old magazine, then manipulated and collaged into a new illustration, will become the source of a copyright-infringement case. However, I also clearly stated in several places that it's always best to get permission to use someone else's image.—J.A.M.

ALTHOUGH I'M A FIRM BELIEVER IN copyright protection, I would hardly look to the royalties on digital audiotape (DAT) players for "inspiration." The reality is that amateur musicians who use DAT for creating their own music are forced to pay a "royalty" to established performers who already have legitimate avenues for royalty collection (BMI and ASCAP). What will be next? Will the Software Publishers' Association lobby for a disk tax to compensate for possible software piracy?

*Greg Scheer*
*Wilkinsburg, Pennsylvania*

## PowerPC Bits

READY TO UPGRADE TO POWERPC? Maybe not, depending on the monitor you choose. The on-board video of the Macintosh Quadra/Centris 610 supports monitors up to 21 inches in 8-bit color, and up to 16 inches in 16-bit color; but the Power Mac 6100's on-board video maxes out at 8-bit color on a 16-inch monitor.

If your monitor is larger than 16 inches, you must buy either a NuBus card or a smaller monitor. Sign me: Not Ready to Downgrade.

*Gary Van Handel*
*Houston, Texas*

I AM EXTREMELY DISAPPOINTED BY the packaging of the Power Macs. We have a new level of computing power placed inside the same old, boring, and unfashionable case. The PowerBook didn't become one of the most popular portables because it looked like its competitors. Can Apple put a little more effort into the external design of its computers? The benefits we could gain may be well worth the effort.

*Kevin McGinty*
*via America Online*

## Mistaken Identity

I WAS SHOCKED BY THE COVER OF THE June 1994 issue of *Macworld*. The square and compass, shown as tattoos on the muscular arms in the photograph, is

*continues*

# GET TOTALLY

IN CONTROL's multi-column Action Outliner helps you plan smarter.

Flexible calendar features make scheduling a breeze.

# IN CONTROL!™

New IN CONTROL 3.0 is the only planner and organizer that combines the powerful, multi-column Action Outliner™ with state-of-the-art calendars, so you can plan, prioritize and schedule any way you want!

- ✓ Manage your schedule effortlessly with full-featured daily, weekly and monthly calendars!
- ✓ List, organize and sort all your plans in any order with the flexible, multi-column Action Outliner!
- ✓ Instantly look up contacts from FileMaker® Pro, Touchbase® Pro, Now Contact™ and Dynodex™!
- ✓ Print schedules and calendars that fit your paper organizer!
- ✓ Get *totally* in control with all this... plus banners, automatic reminders, auto-carryforward, auto-phone dialing, document linking and much more!

For more information, or site license or volume discounts, call: **1-800-925-5615** or (617) 776-1110.
To upgrade, call: **1-800-784-7388 ext. 300.**

UNCONDITIONAL GUARANTEE 30 DAY MONEY BACK

THROUGH PARTICIPATING VENDORS

MacWEEK ◆◆◆◆ MacUser ★★★★½ MACWORLD ★★★★

ATTAIN

Attain Corporation
48 Grove St., Somerville, MA 02144 (617) 776-1110
Fax: (617) 776-1626 Internet: Sales@Attain.com

All products are trademarks or registered trademarks of their respective holders.

**Circle 6 on reader service card**


## CORRECTIONS

- *The June 1994 "Video-Editing Tools" feature incorrectly stated that the Grass Valley Group is owned by Carlton Communications. In fact, Tektronix owns the Grass Valley Group.*
- *The tray-loading CD-ROM drive in the Power Macintosh 6100/60 was introduced in the LC 575, not the Quadra 605* (Reviews, *June 1994).*
- *Version 4.0 of Adobe Premiere costs $79 for users upgrading from version 3.0, and $129 for users upgrading from versions prior to 3.0* (News, *June 1994).*
- *Opcode Systems' OMS fixes MIDI problems for the PowerBook modem port only, not the printer port* (Letters, *June 1994).*
- *The May 1994 article "Does PowerPC Beat Intel's Best CPUs?" incorrectly described a micron as being a millionth of an inch. In fact, a micron is a millionth of a meter.*
- *Nanao's rebate offer of $100 applies only to customers who purchased monitors between January 1 and March 31, 1994* (News, *May 1994). Also, the offer expired April 30.*
- *New Video Corporation's phone number is 310/449-7000, fax 310/449-0132* (New Products, *May 1994).*
- *Decathlon Corporation's Logo SuperPower product also comes in Aldus FreeHand format* (New Products, *May 1994).*
- *The Power Macintosh Upgrade Card is not available for the Mac IIvi, IIvx, or Performa 600; instead, owners of those Macs may replace the motherboard with a Power Macintosh 7100/66 or 7100/66AV motherboard* (PowerPC News, *June 1994).*
- *Golden Triangle has not folded, as indicated by a headline in the June 1994* MacBulletin. *As correctly reported in that news item, the company is reorganizing.*
- *The phone number for Now What Software is 415/885-3432* (Reviews, *July 1994).*

the universal symbol for Freemasonry. This symbol has great significance for millions of Freemasons around the world, and your use of it for commercial purposes is unacceptable.

*Frederick Randall*
*Secretary,*
*Rantoul Lodge No. 470*
*Ancient Free and Accepted Masons*
*Rantoul, Illinois*

The square and compass as pictured on our cover referred only to the drawing functions of the products reviewed and were not intended to imply anything else, either about the software or about Freemasonry. *Macworld* apologizes for any misunderstanding.—Ed.

## Math without an FPU?

YOUR PROCESSOR-PERFORMANCE tests are easy to read and easy to understand, and I appreciate them very much, but one thing is not clear to me. In the *News* section of your April issue, Macworld Lab tested the new LC 575, which lacks a floating-point unit. The tests showed very good results in both processor and FPU performance, but how do you test FPU performance in a machine without a coprocessor?

*Peter Schmidt*
*Brookline, Massachusetts*

Most (but not all) programs that take advantage of an FPU also have separate code to work on machines without one. Thus, on the LC 575, the floating-point calculations were executed using the alternate code.—Ed.

## But Where's the Reset Switch?

REGARDING GUY KAWASAKI'S CORRELATION between his firstborn and his Mac: he is right on the money (*Wise Guy*, May 1994). A man might better understand the impact that a new baby will have on his life if he stops to remember the day he bought his first computer.

I struggled through late-night feedings, ear infections, reduced income, and the day-care nightmare; *then* I bought my first Macintosh. What have I learned? Not to take crashes and error messages so seriously!

*Laurie Curtis*
*Somers, Connecticut*

## Freer Trade

*HOLA, AMIGOS!* WITH ALL THIS talk about the North American Free Trade Agreement, you'd think the mail-order companies would take advantage of the million-dollar market right next door in Mexico.

In all of the 50-plus computer publications we receive at our university, we found only one international toll-free number—this out of more than 300 direct-sales firms. Computer companies across America, drop us a line. If it's toll-free, all the better.

*James Mulford*
*Mérida, Yucatán, Mexico*

*continues*

# XXXXL STORAGE

*Pinnacle Sierra 1.3GB™ Optical Hard Drive • 4500 RPM Rotational Speed • 19 msec Effective Access Time • 2.0MB/sec Data Throughput*

It seems impossible to find a hard drive that's large enough to fit your storage needs today. That XL hard drive you just bought is now full.

Introducing a solution that's large enough to solve any storage problem... the Sierra 1.3 Gigabyte rewritable magneto-optical hard drive. It has the speed of a hard drive with an infinite capacity. So every time you fill up an optical disk, just add another one.

You can store online data, secondary data or even backup your files on your Sierra optical drive. It will never let you down. Optical is the most reliable storage device available. You can erase and write over four million times on optical media that has a shelf life of over 30 years. Save XL amounts of money over magnetic media which costs about $1.50 per megabyte, as compared to optical which costs only 15¢ per megabyte. Perfect for applications that demand XL amounts of data such as graphics, prepress, imaging, networking, digital audio and video, multimedia, and any other data intensive applications.

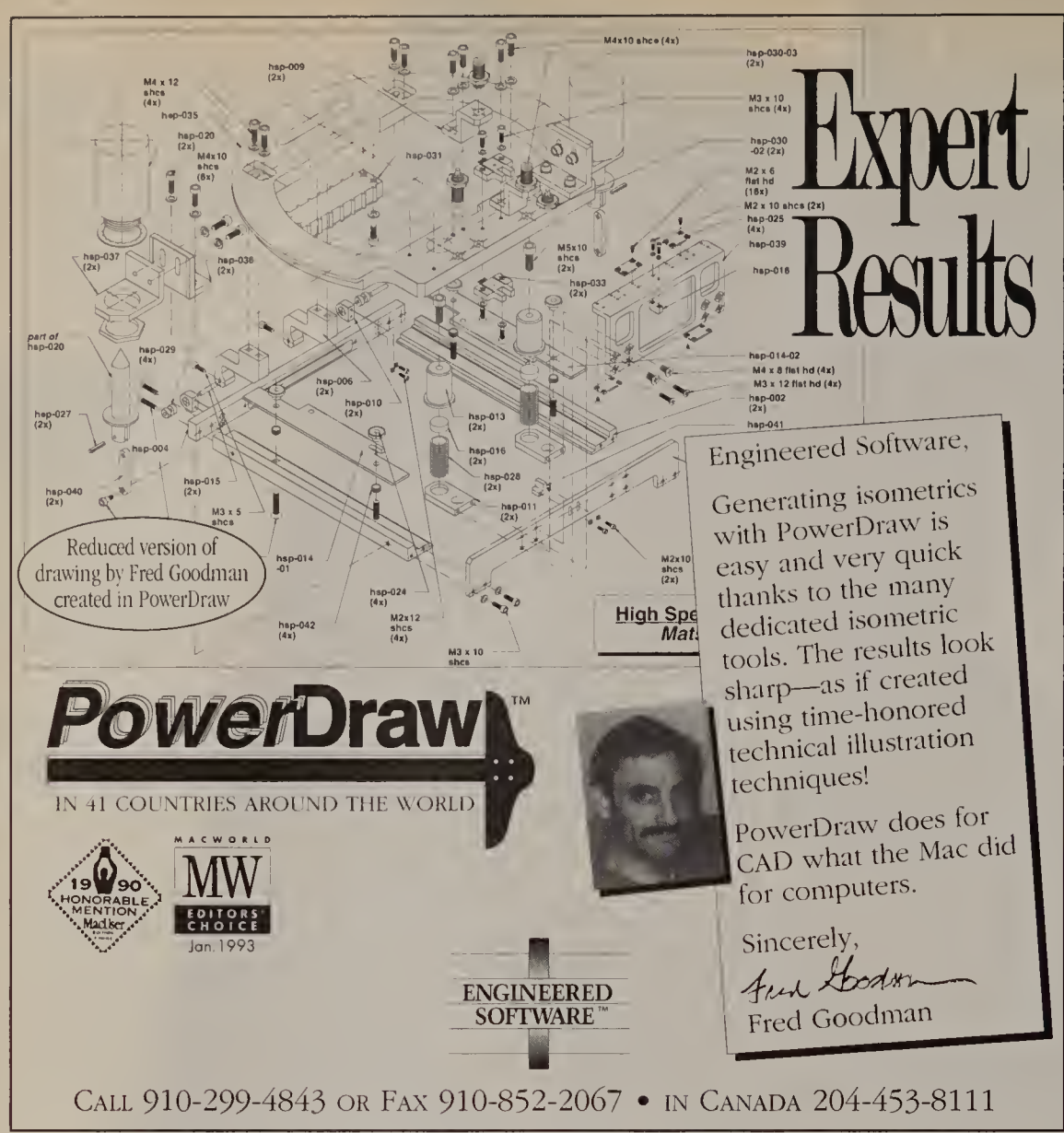
So the next time you're shopping for that XL hard drive... just keep the one you have and buy something that you will never outgrow... the Sierra 1.3GB™. To order or for a local reseller call: **800-553-7070**

PINNACLE MICRO
THE OPTICAL STORAGE COMPANY®

International Tel. 714-727-3300 U.S. Fax 714-727-1913

All Trademarks and Registered Trademarks of Their Respective Owners.

**Circle 115 on reader service card**




**Circle 12 on reader service card**

As far as Apple is concerned, only one table can support the family.

MacUser, June '90

Apple® calls it "The perfect place to put your computer to work." It's sturdy, ergonomic and carefully designed around Apple's modular footprint to fit the Mac family *plus* peripherals. Call today for a free catalog of our complete line.

MacTable®

☎ 800-722-6263
or 206-481-5434 in WA state

ScanCo
P.O. Box 3217, Redmond, WA 98073-3217

*MacTable design is patent pending*
*MacTable is a trademark of Scandinavian Computer Furniture, Inc. Apple is a trademark of Apple Computer, Inc.*




## Random Notes

I LOVE YOUR 'ZINE. MY LOCAL NEWSstand thinks I've been out in the sun too long, even though I'm from Seattle, where there is no sun. Your magazine arrives on the newsstand's musty shelves during a three- or four-day window at the end of each month, and I'm there with a three-latte buzz, waiting to attack the stockboy like a pack of hyenas.

*Nigel Heinsius*
*Whereabouts Unknown*

## Net Losses

I COULD NOT AGREE MORE WITH Steven Levy's "Net Gains" column in the March 1994 issue (*The Iconoclast*). As yet, I have not connected to the Internet, primarily because I own an older, 1200-bps modem, and the Internet is not a user-friendly place for folks like me. A fellow worker connects quite often, but after struggling for three months and spending hours reading up on the subject, he is just now starting to feel comfortable with what he is doing.

I am not prepared to invest that much time and effort in learning to surf on the Internet.

*Chris Gartner*
*Winnipeg, Manitoba, Canada*

## Axion Lives

I WISH TO COMMEND DAVID POGUE ON his fine article "Multigrain Serials," and thank him for his kind words regarding the Axion Switch (*The Desktop Critic*, June 1994).

One point needs to be made: Axion did endure a corporate restructuring, but the rumors of its demise were a bit premature. Axion is still here, and it is better than ever!

*Larry Woodard*
*Vice President of Product and Business Development, Axion*
*Sunnyvale, California*

Letters should be sent to *Letters, Macworld*, 501 Second St., San Francisco, CA 94107; via fax, 415/442-0766; or electronically, to CompuServe (70370,702), MCI Mail (294-8078), America Online (Macworld), or AppleLink (Macworld1), or via Internet (70370.702@compuserve.com). Include return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*. m

# Buy one, get eight free.

## Finally, all the business graphics tools you need in one integrated solution: ClarisImpact.

"★★★★"—*Macworld*
"★★★★"—*MacUser*

Why buy your graphics programs one by one when you can get them all in one? New ClarisImpact™ software lets you automatically create timelines, calendars, flow charts, data charts, and org. charts, or draw free-form graphics—all with one consistent interface, all in just minutes.

And it's the only solution that has integrated presentation and word processing capabilities that let you combine your graphics with text without leaving your document.

Best of all, ClarisImpact and its built-in native Power Macintosh version can be yours for a special introductory suggested price of just $149.*

See it today at your Claris dealer. Or call us for a free demo.

**Free Demo**

*For a free demo disk call* **1 800 544 8554 ext. 348**. *Then take advantage of the $149* introductory price offer!*

CLARIS®

Simply powerful software.™

ClarisImpact was awarded four stars by Macworld magazine and four mice by MacUser magazine in their respective June 1994 issues; it was awarded the Buyers Assurance Seal by InfoWorld magazine in the April 4, 1994 issue. *The regular suggested retail price for ClarisImpact is $399; special introductory price offer good now through September 30, 1994. © 1994 Claris Corporation. All Rights Reserved. Claris is a registered trademark, and ClarisImpact, the ClarisImpact design and Simply powerful software are trademarks of Claris Corporation.

# How To Relieve Congestion and Prevent Headaches.

Introducing the newest member of the Xerox MajestiK Color Serie

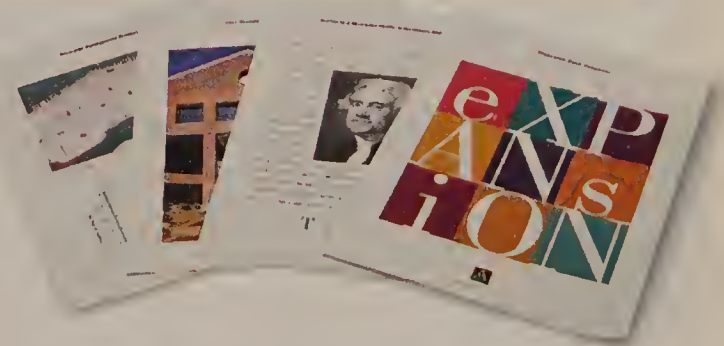
The incredible *4900* Color Laser Printer goes a long way in smoothing out the proble of printer overload. At 3 ppm color and 12 ppm b&w, it's the fastest color/monochrome printer in its class, you get your output right when you need it. Your color and b&w is managed from one printer, so you do have to make separate sets and then integrate pages. And with up to 1200 x 300 dpi and Xerox Quad D

Adobe PostScript

XEROX® and all Xerox product names mentioned in this advertising are trademarks of XEROX CORPORATION. © 1994 by Xerox Corporation. All rights reserved. Adobe®, PostScript®, and the PostScript logo are trademarks of Adobe Systems, Incorporated.

echnology, you get graphic quality printouts. Plus the new
*4900* Printer comes with a Total Satisfaction Guarantee, so you
also get peace of mind. All this for much less than you'd think.
Just what you'd expect from the company that pioneered laser printing.

CALL 1-800-ASK-XEROX ext. 4900 FOR INFORMATION AND SAMPLES.

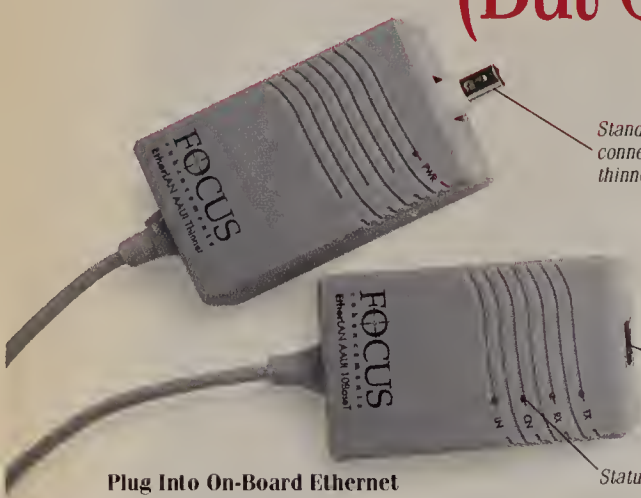



THE DOCUMENT COMPANY

XEROX

**Circle 100 on reader service card**

# Our EtherLAN Family Keeps Growing.
## (But Our Prices Keep Shrinking!)




Standard BNC connector for thinnet.

Put your Quadra onto 10BaseT instantly!

Status LEDs.

**Incredible!** new low price $49.99

**COMPARE**

| | |
|---|---|
| Asanté | $85 |
| Dayna | $69 |

**Plug Into On-Board Ethernet**

*FOCUS Enhancements transceivers allow you to use the on-board Apple Ethernet ports in high-end Macs and Apple printers (AAUI port), so you can take advantage of Ethernet speed without the additional purchase of an Ethernet network interface card. Each model attaches in seconds to a thinnet backbone or versatile 10BaseT network for plug-and-play speed and convenience. The Tr/FN is a single-post thinnet transceiver that comes with a T-connector. The Tr/FN-T, our 10BaseT transceiver, has one RJ-45 connector for standard twisted pair Ethernet connection. Includes a FREE 6-foot 10BaseT patch cord.*

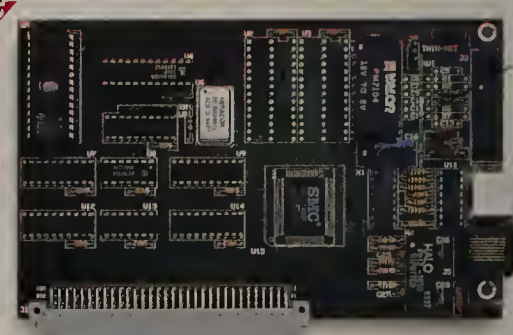
PowerMac compatible

**Incredible!** as low as $74.99

**COMPARE**

| | |
|---|---|
| Apple | $103 |
| Asanté | $125 |

**$39 performance application with every EtherLAN card, FREE!**



High-speed SMC technology makes this the fastest Ethernet card for your Mac.

Single or dual media cards for network flexibility.

**High Speed, High Value**

*Our EtherLAN boards now have enhanced performance, thanks to new Ethernet technology from SMC. With a new, more efficient driver, they will boost your speeds while maintaining complete compatibility with TCP/IP, DECNet and Netware. Features unique, dynamically-allocated memory, and its own SNMP capability and a means to view network statistics from your Mac. Our auto-sensing dual-media cards allow you to quickly change from one Ethernet media to another without re-installing a board or restarting your Mac. Comes with a great performance measuring application, a $39 value, free!*

Front-panel status indicators for power, hub link, and data.

**EtherLAN Hub9**
**$219.99**

**COMPARE**

| | |
|---|---|
| Asanté | $369 |
| Dayna | $249 |

**Easy Expansion For Smaller Networks**

*The EtherLAN Hub9 offers the same outstanding features as the Hub16, in a streamlined case that's perfect for smaller networks, workgroups, or expansions of larger networks. Equipped with eight 10BaseT ports and one thinnet port, it also has an extra RJ-45 crossover port for easy cascading of hubs. Like the Hub16, this convenient unit features auto-partitioning and auto-reconnect. Designed for easy, trouble-free use, it's simple to install, and requires no management software.*

**EtherLAN Hub16**
**$499.99**

**Convenience and Value, Times 16**

*Compare the new EtherLAN Hub16 to other Ethernet hubs – it gives you the best value around, with the features and quality your larger network needs. In one easy-to-use, self-contained unit, the Hub16 provides 16 10BaseT ports and one BNC (thinnet) port. It offers auto-partitioning and auto-reconnect to bring a port back on line quickly once it's clear, and it requires no management software – just connect it and forget it! It installs quickly and easily in offices with an existing 10BaseT wall jack or BNC connection; separate brackets are available for mounting on a standard 19-inch rack.*

**EtherLAN Print**
**$279.99**

**COMPARE**

| | |
|---|---|
| Asanté | $458 |
| Dayna | $419 |

**A TurboNet* with any EtherLAN Print – a $15.99 value – FREE!**

**The Better Print Router**

*Easily bridge your LocalTalk LaserWriters to an Ethernet network. It works with any brand of LocalTalk-compatible network printer or other LocalTalk devices such as Macs. With a BNC connector for thinnet and RJ-45 for 10BaseT, you have the ultimate in network flexibility. Includes an easy-to-use security and management utility. For a limited time, get a FOCUS TurboNet to connect your LocalTalk line to the EtherLAN Print. One free with any EtherLAN Print purchase. Choose the EtherLAN Print which supports two printers for $279.99 or the EtherLAN Print Plus which supports up to six LocalTalk devices for $399.99.*

**EtherLAN SC**
**$199.99**

**COMPARE**

| | |
|---|---|
| Asanté | $459 |
| Farallon | $359 |

**Ethernet from any SCSI Port**

*Economical yet powerful, get up to speed and get onto the Ethernet network with the EtherLAN SC or SC-T. Fully compatible with 10BaseT and Thinnet networks, you will be up and running in a few minutes. PowerBooks, Classics, SE, IIsi, LC and others can travel in the high-speed lane at a bargain price.* "Bottom-line Pick" — *Macworld 2/94*

**Over 30 Quality Ethernet Solutions To Choose From. Call FOCUS Enhancements!**

To Order And Get Your Free Catalog:

# 800-538-4888

Resellers And VARs Welcome!

FOCUS enhancements

©1994 FOCUS Enhancements, Inc. All rights reserved. All FOCUS Enhancements products are registered trademarks of FOCUS Enhancements, Inc. All prices, items, and availability are subject to change. All product names are trademarks of their respective holders. All prices verified on April 11, 1994 *TurboNet manufactured under patent license from Farallon Computing, Inc.

Circle 201 on reader service card

LATE-BREAKING NEWS

# MacBulletin

**Apple Drops DOS-Compatible Card** After only two and a half months, Apple discontinued its DOS Compatible Card, which put a 25MHZ 486SX-based PC inside a Centris or Quadra 610. At press time Apple said it would also discontinue the preconfigured Mac Quadra 610, DOS Compatible system on June 13.

**Apple Cuts Prices Yet Again** Apple recently cut the prices of selected peripherals, PowerBooks, and Quadras. The price of the Quadra 660AV 8/230 dropped 20 percent, to $1499; the same version with a CD-ROM drive fell 18 percent, to $1799; and the 8/500 model went down 14 percent, to $2369. The Quadra 950 0/1000 Publishing Configuration was cut 15 percent, to $6229. Price cuts on models of the PowerBook 145B and 165 ranged from 12 percent (down to $1259 for the 145B 4/80) to 27 percent (now $1699 for the PowerBook 165 4/160 with Express Modem). The PowerBook Express Modem Kit was slashed 33 percent, to $215. Apple also reduced the price of the OneScanner by 20 percent, to $699; of the LaserWriter Select 300 by 18 percent, to $600; and of the 14-inch Macintosh Color Display by 21 percent, to $399.

**Radius and SuperMac Join Forces** Two leaders in the Macintosh graphics and digital-video hardware market have announced their intention to merge. Subject to shareholder and federal approval, Radius and SuperMac will come together in a deal valued at approximately $80.5 million. No changes in operations will occur at either company until October, according to SuperMac. If the merger is still on, at that time the companies will announce their product strategies for implementation.

**120MHz PowerPC 601 Chip** In a technology demonstration at Apple's recent Worldwide Developers Conference, IBM and Motorola showed a 120MHz version of the PowerPC 601 processor running in a prototype Macintosh. The 120MHz chip is 20 percent faster than the fastest previous 601 chip, a 100MHz model that is available in small quantities but is not yet used in a shipping Power Mac (see *MacBulletin, Macworld,* June 1994). Apple said that the system shown was not guaranteed to be produced but was intended to show developers the capability of the PowerPC chip architecture.

**Native Photoshop Does Layers** The long-awaited upgrade to Adobe Photoshop, which will support multiple layers, is expected to ship by September of this year. Other new features of 3.0—a native PowerPC release—include CMYK preview, floating customizable palettes, color masks, and additional filters. For $895, you'll get a CD-ROM version as well as the standard floppy-disk set; upgrades are $149. 415/961-4400, 800/833-6687.

**QuickMail Goes 3.0** CE Software has announced an August ship date for version 3.0 of QuickMail. The client-only upgrade features rules-based mail management (filtering messages based on preset criteria), multiple-criteria searches of messages (including sender, subject, and body text), and a spelling checker. A ten-user pack retails for $649; current users can upgrade for $12 per client; and users who purchased version 2.6 after June 13 will get the upgrade for free. 515/221-1801, 800/523-7638.

**QuickDraw GX Predux** By the time you read this, QuickDraw GX, Apple's long-delayed enhanced imaging architecture, should be shipping—but not from Apple. Peirce Software's Peirce Print Tools ($129), a collection of GX printing extensions, also includes GX (which can be installed under System 7.1). Apple plans to ship GX as part of System 7.5 later this year. Peirce, 408/244-6554, 800/828-6554. m

# News

EDITED BY TOM MORAN

IN THIS ISSUE

**p. 35** Epson Color Printer **p. 35** Lotus Drops the Mac **p. 36** Stackable Storage
**p. 36** Low-Cost NEC Display **p. 36** MicroNet Disk Array
**p. 37** 4GB and 9GB Hard Drives **p. 37** Virus Watch **p. 37** Used Mac Price Index

## Taligent Rising

KEVIN IRBY

In 1992, the earth shook: IBM and Apple clasped hands and pronounced themselves allies. From this union sprang Taligent, a small Cupertino, California, company that's now developing nothing less than a universal operating system. When complete, the Taligent OS will be scalable and platform-independent, running on machines based on Intel, PowerPC, and Hewlett-Packard PA-RISC processors. If Taligent is successful, the days of linking an operating system to a particular chip will be over, and the computer industry will again have to adjust to a new way of doing business.

What's inside a universal operating system? Based on a combination of IBM's Mach 3.0 microkernel and Apple's long-term system-software project code-named Pink, Taligent's operating system is completely object-oriented. Users move through a desktop world populated by People, Places, and Things, manipulating data with tools that are less individual applications than they are extensions of the core system. On a lower level, Taligent's microkernel architecture means that a relatively small chunk of code handles most or all of the interaction with the CPU and other hardware. You can add support for something as simple as a peripheral or as complex as a networking technology just by writing a new system software module. Readers may see similarities to the Mac's system software model of extensions and control panels, but a microkernel architecture is far better-organized, faster, stabler, and, drumroll please, portable.

Developers create programs by adding on to frameworks—software objects that handle basic application services. A graphics framework, for example, would include a generic interface, plus rudimentary drawing and painting tools. A 3-D modeling company could take the graphics framework and add modeling and display algorithms. The theory is that developers, freed from generating the huge amounts of interface code demanded by today's event-driven software, will be

able to concentrate on innovating and improving core technologies. Completed applications will plug into Taligent's Application Framework, which will be entering beta testing as you read this and is expected to be available in the first half of 1995. This first release will run alongside several existing industrial-strength operating systems, including OS/2, AIX (IBM's Unix), HP-UX (Hewlett-Packard's Unix), and eventually PowerOpen (which is based on AIX and will replace Apple's A/UX). Desktop computers will have to wait, though, as Taligent places heavy requirements on an OS, including full 32-bit compatibility, preemptive multitasking, and protected memory. Even for the hardware heavy-hitters, the complete Taligent system architecture won't appear until later in 1995, and after that, migration down to the desktop level will be a lengthy process, because of both hardware and software requirements.

### Waiting for Applications

So who's going to write software for this OS wunderkind? Porting software to a new operating system is never easy, and committing to the Taligent OS is an even greater step, as most companies will have to rewrite their applications from the ground up to make them work in Taligent's new order. Taligent, on the other hand, contends that its system software, frameworks, and object-oriented approach will cut development time enough to make the transition worthwhile.

Nevertheless, vendors will be reluctant to adopt Taligent until it's clear that a reasonably large market exists for its products. On HP and IBM Unix machines and on Macintoshes, the Application Framework will act as a stepping-stone to the full Taligent operating system, but at this time no such stepping-stone exists for Intel-based platforms. However tempting it may be to contemplate the drama of an operating system showdown, Taligent officially denies any intent of being a Microsoft killer, and the realities of the market predict a Windows-compatible Application Framework at some point. Otherwise, Windows devotees moving to Taligent would have to make the kind of complete and sudden transition that end users hate. Furthermore, Microsoft would have little incentive to port versions of its own business applications.

One thing that will smooth the road to Taligent is OpenDoc, Apple's cross-platform vision for component software. OpenDoc will get developers used to writing reusable and self-sufficient software objects, while it gets users adjusted to a more document-centered, task-oriented work environment. Also, because Taligent is a founding member of CILabs, the independent company that's monitoring OpenDoc compatibility, OpenDoc developers can be reasonably certain that this path to Taligent won't drop out from under their feet.

Will Taligent succeed? The Apple-IBM partnership appears to be batting one-for-one with the success of PowerPC, and as bizarre as it sounds, the future of the relationship looks good. The recent addition of Hewlett-Packard as an investor in the company also augurs well for Taligent's prospects, especially since one of the keys to Taligent's success will be its adoption by large corporate buyers for use on their enterprise systems.

What does Taligent mean to current Mac owners if it does succeed? Probably not much for about two years. Apple's current thinking is to (1) ship Taligent's Application Framework on top of PowerOpen in 1995, (2) ship a full system with Taligent running native on Apple hardware with initial sales to enterprise clients, and (3) evolve the Mac OS to the point where it can handle the Taligent Application Framework—currently expected to be sometime in 1996, with the project currently code-named Gershwin (see "Apple Tells Its Software Future" in *News*, *Macworld*, June 1994), although a tricked-out Chicago (Microsoft's next-generation Windows OS) could force Apple's hand. The tip sheet says don't look for People, Places, or Things on your desktop anytime soon. But in the long run, for both Apple and end users alike, Taligent's vision of an object-oriented, cross-platform OS might be too tempting to pass up.

—CAMERON CROTTY

SCOTT PETERSON

Epson's Color Stylus ink-jet printer uses special paper to achieve true 720-dpi resolution.

## Hi-Res Color Ink-Jet

EPSON JOINS THE FRAY

While Hewlett-Packard and Apple have been going after color ink-jet SOHO customers hammer and tongs (see "Battle over Color Printers," *News*, May 1994), Epson America hasn't been sitting still. In fact, the company has just announced its entry into the market: the Color Stylus, a color ink-jet printer that can print at 720-dpi true resolution. Of course, in order to achieve this resolution, you need special paper, which Epson sells for $24 for 200 sheets, more than ten

*continues*

# In Brief

### SuperMac Adds II Spigot

Spigot II Tape is the latest in SuperMac's VideoSpigot digital-video hardware line. The full-size NuBus card encompasses the functions of the original VideoSpigot and adds a composite-video-out port, support for recording to tape, and additional minor improvements. Spigot II Tape ships with SuperMac's ScreenPlay II software and lists for $999. 408/541-6100, 800/334-3005.

### CoSA Revives Hitchcock

CoSA, a division of Aldus, recently began shipping the resurrected Hitchcock, an application for professional nonlinear video editing. Hitchcock supports 60-fields-per-second video at 640-by-480-pixel resolution using JPEG compression. It also includes stereo audio, produces edit-decision lists, and exports files as QuickTime movies. It is designed to work with the most common Macintosh JPEG video-digitizing boards. 206/343-4208.

### Catalog for People with Disabilities

Apple's new mail-order service, called Aisle 17, offers assistive technology products to adults and children with disabilities. Among the products will be Macintoshes bundled with various devices, such as the Co:Writer writing assistant. Aisle 17 is open 24 hours a day, seven days a week, but is available only in the United States for now. 800/600-7808, for TTY devices 800/755-0601.

### Lotus Drops the Mac

After a long history of futility in developing for the Macintosh (Jazz, for example), Lotus has announced it will do no new development for the Mac Operating System, with the exception of communications products including Notes and cc:Mail. 617/577-8500, 800/343-5414.

times the cost of ordinary printer bond. Users can proof their images at 360 dpi and use the 720-dpi resolution for final output.

Using Epson's proprietary piezoelectric ink-jet technology, the Color Stylus in standard mode prints at 360 dpi on any kind of paper. The base model is a serial QuickDraw printer, and although Epson sells a LocalTalk upgrade card, the company currently has no plans for an Ethernet upgrade. Similarly, Epson expects to update the driver and add a ColorSync model when QuickDraw GX appears but has no plans for PostScript emulation.

Print times for the Macintosh model were not available at press time, as the driver software was incomplete, but Epson claims that at 360 dpi, the Windows configuration of the Color Stylus is twice as fast as comparable printers, and slightly faster even at 720 dpi. Whether or not this speed makes it to the Mac remains to be seen. The printer uses two ink cartridges: one containing black ink and the other containing the cyan, magenta, and yellow inks. You'll be able to replace the black ink cartridge separately when it runs out—replacement costs were not available at press time. The Color Stylus handles up to legal-size paper and ink-jet transparencies, although you can print only at 360 dpi on transparencies. The Color Stylus is expected to ship this fall for $549 (street price). Epson America, 310/782-0770, 800/922-8911.
—CAMERON CROTTY

SCOTT PETERSON

La Cie offers many types of drives in different capacities for its Joule Modular Storage System.

# Stackable Storage

MODULAR DRIVES AT NO PREMIUM

La Cie has designed the Joule Modular Storage System, a series of stackable storage modules including hard drives, tape drives, SyQuest removable-cartridge drives, and optical drives. Up to seven of the SCSI devices can be stacked, mixed, and matched. La Cie will offer Joule drives in different sizes—full-height, half-height, and 2½ inch—each with the hardware to fit it into the Joule system, and for about the same price as an ordinary storage device of the same capacity.

Each Joule system starts with a base unit that includes one storage device; a 100-watt universal power supply; and a top cap, which covers the connectors in the top drive of the stack and includes the single SCSI cable that connects to the Macintosh. Another feature of the Joule system is portability: any drive except the base can be plugged into or pulled out of the stack (by sliding it in or out) without breaking the SCSI chain, although the system must be turned off.

A typical base unit with a 340MB hard drive lists for $389. Hard drive module prices start at $259 for a 170MB version and top out at $2339 for a 2GB device. Other available base units are a $539, 105MB SyQuest drive and a $689, 270MB SyQuest drive; both SyQuests are also available as modules. Other modules include 5GB and 8GB DAT drives, 155MB and 600MB tape drives, and optical drives in either 128MB or 230MB versions—all modules and base units are currently shipping. La Cie, 503/520-9000, 800/999-0143.—T.M.

# MultiSync 2V Monitor

LOW-COST COLOR

Designed mainly for the home- and small-office markets, NEC's MultiSync 2V is a 14-inch color monitor that shows up to 1024 pixels by 768 pixels and has an estimated selling price of $355. The display has a 0.28mm dot pitch, and its automatic digital controls adjust the size of the active viewing area and its centering.

The MultiSync 2V complies with the EPA's Energy Star power-saving guidelines and with the MPR II guidelines for emission of electromagnetic fields. Slated to ship on June 13, the 2V will come with a three-year warranty. NEC, 708/860-9500.—T.M.

KEVIN CANDLAND/SCREEN IMAGE—TONY STONE IMAGES

The 14-inch NEC MultiSync 2V display should sell on the street for about $355.

# Big Arrays

MICRONET EXPANDS RAVEN LINE

For those who desire to frolic in a firehose of data, MicroNet has announced several high-speed, high-capacity drive options. The top of that company's Raven line now includes a 17.3GB dual-drive, SCSI-2 Fast, RAID Level 0 array that comes in two flavors: one for the Quadra 900 and 950 and Power Macintosh 8100, and one for the Quadra 650, 800, and 840AV. The difference between the two pack-

## BUGS & TURKEYS

Apple changed the EtherTalk protocol for its LaserWriter Pro 630 and IIg. As a result, equipping one of these printers with a Farallon EtherWave transceiver slows print jobs to a crawl. Users hit by this slowdown can either use a non-EtherWave transceiver on their 10BaseT chain leading to the 630 or IIg, or contact Farallon for a free hardware device that, when placed between the printer and transceiver, fixes the problem.

The MacPro Plus keyboard from Key Tronic won't work if you've got a trackball connected to it. The problem shows up as soon as you restart your Mac. Key Tronic hopes to have a fix available soon.

The LC 575's new Energy Saver control panel is supposed to allow users to specify a period of inactivity after which their monitor shuts off. However, restarting the Mac returns the control panel to its default setting of 60 minutes before shutdown. Apple said it hopes to fix the problem soon.

*Macworld* will send you a Bug Report T-shirt if you are the first to inform us of a serious, reproducible bug that we report in this column, or a Turkey Shoot T-Shirt if we shoot your turkey in this space. See *How to Contact Macworld.*

ages is that the former connects to the built-in SCSI ports of the Quadra 900 and 950 and Power Mac 8100, while the latter ships with the company's NuPort III card, which plugs into a NuBus slot and provides an extra SCSI port. The Raven 17.3GB array uses two 5.25-inch, 9GB Seagate drive mechanisms (see "Big Drives," *News*, in this issue), and features an average access time of 6.3ms. When connected to a Quadra 900 or 950 or a Power Mac 8100, the new Raven can sustain a data-transfer rate of 7.2 MBps, but it tops out at 6.8 MBps when connected to a Quadra 650, 800, or 840AV. The array alone will retail for $15,980; with the NuPort III card, the price jumps to $16,280. In related news, Storage Dimensions has also announced a 17GB array based on the new Seagate mechanisms that is expected to ship in June. Its price was not set at press time.

The Raven Shuttle places two removable 3.5-inch Seagate hard drive mechanisms in a SCSI-2 Fast array, combining speed and transportability. Users can get up to 4GB with an average access time of 6.3ms and a sustained data-transfer rate of 8 MBps. Prices will range from $3995 to $7595, depending on capacity.

PAUL BERG

The MicroNet Raven 17.3GB array comes in two boxes, each with a 9GB Seagate drive mechanism.

MicroNet has also announced a Macintosh version of its RAIDbank SCSI-2 Fast disk array system for the Quadra 650, 800, 900, 950, and 840AV. The new RAIDbank can now support six drives for up to 12GB of storage with an average access time of 8ms to 11ms and a sustained data-transfer rate of 7.2 MBps. The RAIDbank supports RAID Levels 0, 1, and 5, and will ship in July for $3995 for a desktop model, $3895 for a rack-mount model, and $4095 for a tower-case model. MicroNet, 714/453-6000, 800/800-3475; Storage Dimensions, 408/954-0710.—CAMERON CROTTY

## THE AMCOEX INDEX OF USED MAC PRICES

| Machine/RAM/Hard Drive | Average Sale Price | Monthly Change |
|---|---|---|
| PowerBook 100/4MB/20MB | $675 | –$25 |
| PowerBook 140/4MB/40MB | $950 | –$50 |
| PowerBook 180/4MB/80MB | $1750 | –$50 |
| PowerBook Duo 230/4MB/80MB | $1100 | $0 |
| Mac Classic/2MB/40MB | $400 | –$25 |
| Mac SE/30/2MB/40MB | $650 | +$50 |
| Mac LC II/4MB/40MB | $550 | +$50 |
| Mac IIsi/3MB/40MB | $575 | –$25 |
| Mac IIci/4MB/80MB | $925 | +$25 |
| Mac IIfx/4MB/80MB | $1050 | –$50 |
| Centris 650/8MB/230MB | $1175 | –$25 |
| Quadra 900/8MB/160MB | $2275 | –$25 |

*Index provided by the American Computer Exchange of Atlanta, Georgia (800/786-0717). It reflects sales during the week of May 20. Configurations include keyboard and exclude monitor and display board for noncompact models.*

# Big Drives

### 4GB AND 9GB SEAGATE MECHANISMS

Seagate has announced two SCSI-2 Fast hard drive mechanisms: the 3.5-inch, half-height, 4GB Barracuda, and the 5.25-inch, 9GB Elite. The new Barracuda features a 12ms average access time and a sustained data-transfer rate of 6.5MB per second. Several companies have said they are considering the 4GB Barracuda for their external drive product, but only a few, including Procom, APS, and ClubMac, have set pricing. Procom's retail price for the MD4303 is $6249, and APS's price is $3799; ClubMac will sell its external drive for $3599. Drives based on the Barracuda 4GB mechanism will be available in quantity in July or August.

ROBERT PERRY

The Elite from Seagate is a 5¼-inch SCSI-2 Fast hard drive with 9GB capacity.

The 9GB Elite will be available in June, and more companies have committed to selling the drive, at prices ranging from $5000 to $8000. Look for drives from Procom, APS, Storage Dimensions, MicroNet, FWB, Focus, and ClubMac, among others. Micropolis is racing Seagate to market with its own 9GB mechanism that has an average access time of 12ms and a sustained data-transfer rate of 4.3 MBps to 6.5 MBps. Micropolis expects to sell internal versions for between $5200 and $5500; external versions will run between $6240 and $6600.—CAMERON CROTTY

# In Brief

### Mac Tracks FedEx

Got a Federal Express account number, a System 7 Mac, and a modem? Then you can use FedEx's Tracking Software to find out what your packages are doing, day or night. Once you type in a package's tracking number, you can follow your item's journey from pickup to delivery and find out when, where, and to whom it was delivered. Getting an account number is free, the software is free, and using the software is free, as Federal Express has set up an 800 number for Tracking Software calls. Federal Express, 800/238-5355, international 800/247-4747.

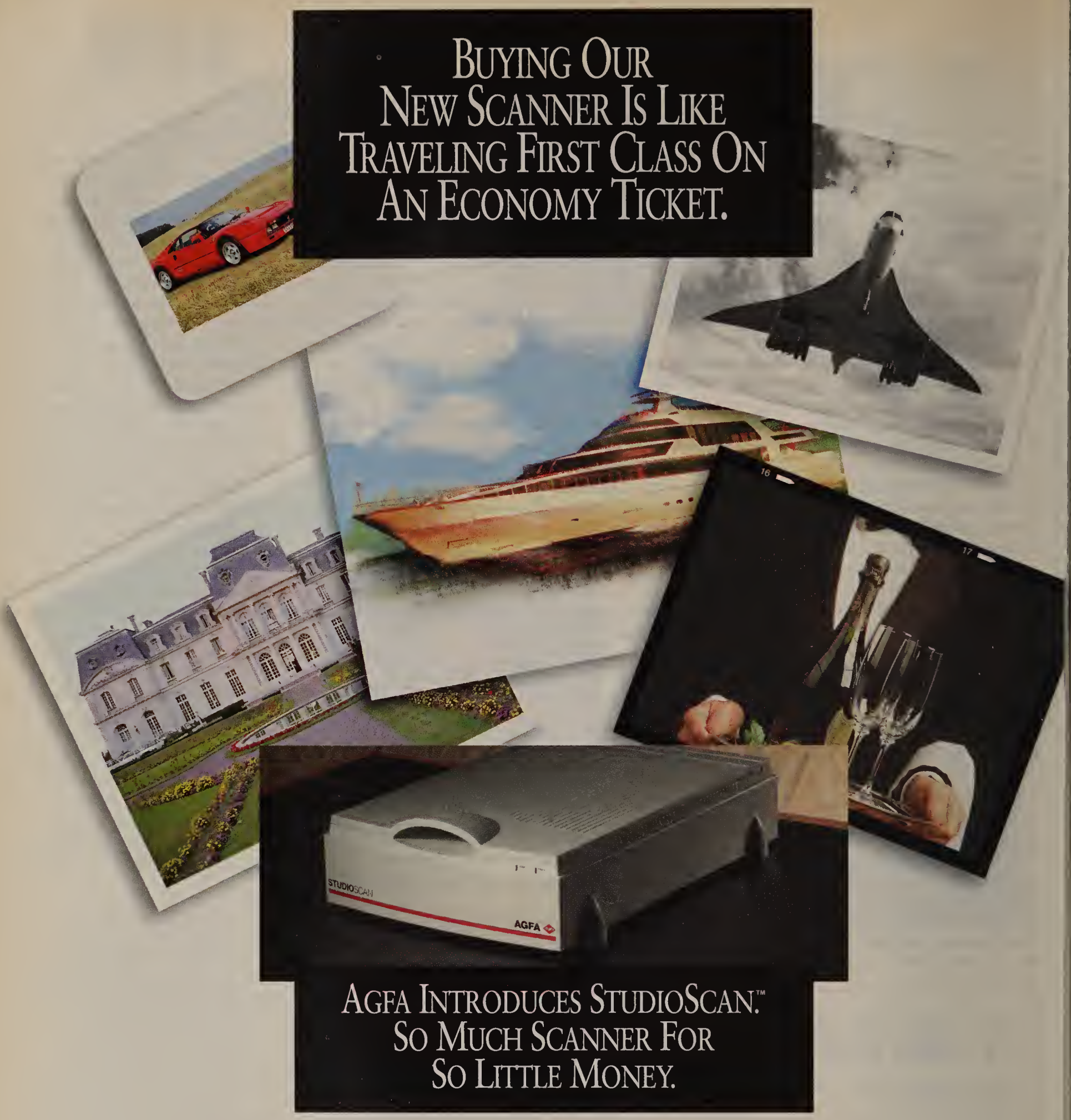
### Encylopedia Price Cut

Compton's NewMedia has reduced the price of its Interactive Encyclopedia from $395 to $149.95. The company said it is "testing" the new price. Compton's NewMedia also ended its Upgrade and Switch competitive upgrade program, which allowed owners of other electronic encyclopedias to trade them in and receive the Compton's Interactive Encyclopedia for $149. 619/929-2500.

### Virus Watch

Central Point and Symantec are both offering additions to their virus-protection software that detect and destroy the new INIT 29-B virus, which is capable of affecting all Macintoshes. Users of Symantec AntiVirus for Macintosh (SAM) 3.5 can upload the new virus definition into SAM Virus Clinic from the Symantec bulletin board (503/484-6699 for 2400 bps, 503/484-6669 for 9600 bps) or from CompuServe, America Online, or AppleLink. For a $12 version on disk, call 503/334-6054 or 800/441-7234. Users of Central Point Anti-Virus for the Macintosh can get the update from the company's BBS (503/690-6650 for 2400 bps, 503/690-4777 for 9600 bps) or from the same online services or the Internet.

# Buying Our New Scanner Is Like Traveling First Class On An Economy Ticket.




## Agfa Introduces StudioScan.™ So Much Scanner For So Little Money.

It used to be that unless you had a lot of money to spend, a scanner was simply out of the picture. But now there's Agfa StudioScan, the new feature-rich scanner that's wonderfully affordable.

StudioScan offers the speed and efficiency of one-pass scanning for both black-and-white and color images. Its flatbed design accommodates sizes up to 8.5″ x 14″, and an optional transparency module scans 35mm slides up to 8″ x 10″.

What's more, StudioScan comes with a complete software package, including Agfa's proven labor-saving FotoLook,™ FotoTune LE,™ FotoSnap™ programs, and Adobe PhotoShop LE. Compatible with both Macintosh and PC systems, StudioScan actually guides an entry-level user through the entire scanning process.

To find out more about StudioScan's high-quality imaging for your layouts, in-house publications, illustrated reports, and more, call 1-800-685-4271 today. And discover the Agfa scanner that offers first-class features at an economy price.

**AGFA** Agfa

The complete picture.

Agfa and the Agfa-rhombus are registered trademarks of Agfa-Gevaert AG, Germany. StudioScan, FotoLook, FotoSnap, and FotoTune LE are trademarks of Agfa-Gevaert N.V., Belgium. Adobe and Adobe PhotoShop LE are trademarks of Adobe, Inc. Macintosh is a registered trademark of Apple Computer, Inc.

**Circle 158 on reader service card**

# Power Mac News

## Did Vendors Deliver?

MOST PRODUCTS SHIPPED AS PROMISED

With the introduction of the Power Macs in March, Apple and third-party developers promised a wide array of native software options and hardware upgrades. Now that the dust has settled, were the promises hype or reality?

**Upgrades** Historically, in the mad dash for more, better, and faster, Macintosh owners wanting the latest upgrade often stumbled because the Apple-produced upgrades simply weren't available in sufficient quantity. Apple seems to have reversed that trend with its PowerPC upgrade cards and motherboard replacements for Centris and Quadra Macs.

An informal survey of Apple-authorized resellers across the country shows that most carry both the PDS upgrade card and the motherboard replacement (we asked about the 6100/60 upgrade). Some dealers, especially in rural areas, special-order the items as they're requested and were quoting waits of one day to two weeks.

**Native software** In February, 27 vendors claimed they would have native versions available within 30 days after the March 14 Power Mac introduction (see "Power Mac Software," *Macworld*, May 1994). But almost a third of them had still not shipped as of June 1.

Among the tardy is none other than Apple Computer, which promised that a native version of PhotoFlash 1.1 would be available at the time of the Power Mac introduction. Other notably tardy products include Macromedia's MacroModel 1.5, Nisus Software's Writer 4.0, National Instruments' HiQ 2.1, Gryphon Software's Morph 2.5, and Dayna Communications' ProFiles 1.0.

One company delivered early: Aldus shipped FreeHand 4.0 a month before it had promised to do so.

—SUZANNE COURTEAU AND MATTHEW HAWN

DOUG ROSS

## Prices Beat Some PCs

6100 IS CHEAPER THAN 60MHZ PENTIUM PCS

Apple has mostly delivered on its promise to sell Macs at similar prices to equivalent Windows PCs. Despite a steep drop in the prices of Pentium-based PCs, a *Macworld* survey of prices shows that, on average, a Power Mac 6100/60 system costs about $300 less than an equivalent 60MHz Pentium PC. But the Power Macintosh 8100/80 costs about $1300 more than an equivalent 90MHz Pentium PC. The average price for a 7100/66 system runs about $200 more than for a 66MHz Pentium PC.

The table "Prices: Power Macs versus Pentium PCs" shows our survey results. Keep in mind that prices do vary by type and location of sales outlet. Our prices reflect what you'll find in major metropolitan areas.

To make sure we were comparing similar systems, we added the costs of missing components, such as the keyboard and monitor for the Power Macs (about $600) and the network and sound cards for the PCs (about $250). For the high end, we compared prices of systems equipped with double-speed CD-ROM drives, 500MB hard drives, and 16MB of system RAM.

We also compared prices of midrange systems (8MB of RAM, a 240MB hard drive, no CD-ROM drive, and no sound card).—GALEN GRUMAN

### Prices: Power Macs versus Pentium PCs

| | Midrange System | High-End System |
|---|---|---|
| **Power Mac 8100/80 (dealer)** | **$4400** | **$5500** |
| 90MHz Pentium PC (dealer) | $3300 (–$1100) | $4100 (–$1400) |
| 90MHz Pentium PC (mail-order) | $3200 (–$1200) | $4000 (–$1500) |
| **Power Mac 7100/66 (dealer)** | **$3300** | **$4400** |
| 66MHz Pentium PC (dealer) | $3000 (–$300) | $4800 (+$400) |
| 66MHz Pentium PC (mail-order) | $2900 (–$400) | $3800 (–$600) |
| **Power Mac 6100/60 (dealer)** | **$2500** | **$3600** |
| 60MHz Pentium PC (dealer) | $3200 (+$700) | $4200 (+$600) |
| 60MHz Pentium PC (mail-order) | $2700 (+$200) | $3200 (–$400) |

*Prices in parentheses show difference compared with the equivalent Power Mac. Prices are based on an informal survey; see text for system configurations.*

## Power Watch

THE LATEST PRODUCTS FOR THE POWER MACS

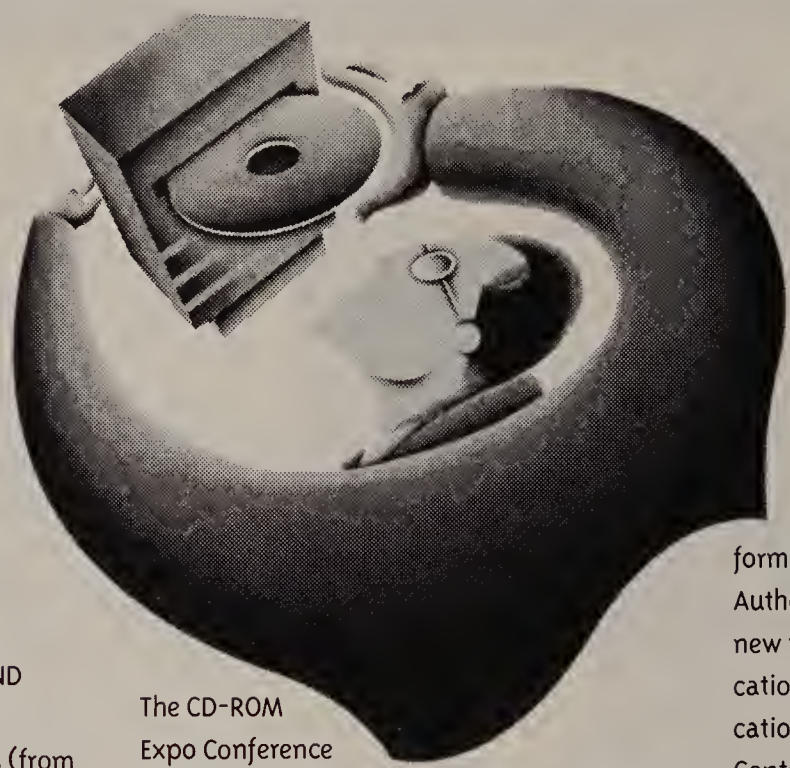
Artifice offers DesignWorkshop, an $895 3-D CAD package. Upgrades from the 680X0 version cost $49. 503/345-7421.

- Connectix's $99 RAM Doubler 1.5 should be available by July in fat-binary format; upgrades from the 680X0 version 1.0 will be free, from online services. 415/571-5100.
- Data Description has released a fat-binary version of its $595 Data Desk 4.2 data analyzer; upgrades from version 4.0 or 4.1 for 680X0 Macs cost $45. SAS Institute says its $695 JMP data analyzer will be available by September, with a $50 upgrade price. Data Description, 607/257-1000; SAS, 919/677-8000.
- TechWorks offers a $295, 256K cache card for the Power Mac 6100 and 7100. 512/794-8533.

Look to the other news sections each issue for Power Mac announcements related to graphics, business, and network users.—GALEN GRUMAN

# The 1994 CD-ROM Expo: Profiting From Digital Publishing

## October 5-7, 1994 • World Trade Center • Boston, MA



### With The Endless Opportunities That CD-ROM Provides...

CORPORATIONS ARE SLASHING COSTS AND multiplying their profits with CD-ROM for advertising and sales presentations (from catalogs to kiosks), records management, technical product support, documentation, and training.

GOVERNMENT IS DRASTICALLY REDUCING the cost of printing, storage and distribution of databases via CD-ROM.

EDUCATORS — IN SCHOOLS, LIBRARIES, AND museums — are turning their analog assets into digital dollars.

THE PRINT-PUBLISHING INDUSTRY — including books, magazines, and newspapers — is expanding to profitable new horizons with CD-ROM's ability to capture and disseminate information at a fraction of historical print costs.

ENTERTAINMENT INDUSTRIES ARE PROFITING from an expanded ability to reach untapped audiences in the consumer market, thanks to CD-ROM technology.

The CD-ROM Expo Conference will feature first-hand success (and horror!) stories from all these communities, including valuable lessons learned in the production and marketing/distribution of CDs.

### If You Would Like to Publish a CD...

Don't begin before you've learned how to enjoy the benefits while avoiding the pitfalls!

### If You Are Publishing a CD...

Are you sure you're taking fullest advantage of the CD-ROM tools and techniques that can help you accomplish more in less time, with fewer complications, smaller margin for error, and greater opportunity for profit?

### At the CD-ROM Expo Conference, You Can Learn About...

Successfully publishing and marketing a CD • Maximizing multimedia in CD-ROM production • Coping with multiple platforms and formats • Copyright and licensing issues • Authoring and development tools • Emerging new production techniques • Interactive application design • Networking multimedia applications • Text retrieval and development • Content asset management and exploitation • Strategies for defining markets • Industry trends and developments, including portable and wireless communications • Pricing/promotion/ advertising in new markets • Financing CD-ROM titles • New distribution channels • Creating/converting data to digital form • Transitioning from print and on-line to CD-ROM • Legislative initiatives • Where to find digital talent • In-house CD-ROM production and distribution vs. outside services • Using standard digital formats for different kinds of data... and more.

### If You're Interested in CD-ROM Titles For Home, School, or Business Use . . .

The exhibit floor at CD-ROM Expo will dazzle you with a fabulous array of titles, bringing a universe of information, entertainment, and education to your desktop!

---

**Yes,** I'd like more information about the 8th annual CD-ROM Expo October 5-7, 1994. I'm interested in: ☐ exhibiting ☐ attending

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

TELEPHONE_____ FAX_____

MACWORLD

Send to: CD-ROM Expo '94, 260 Milton St., Dedham, MA 02026 or fax to: 617-361-3389

# The State of the *Art.*

Adobe

1
2
3
4
5
6
7
8
R
M

Here's what's going on in our head. Pencil sketch is scanned into Adobe Illustrator. Rainbow color effect ❶ is created with Linear Gradient. Scanned eye ❷ is colorized in Photoshop to simulate a sunglass effect. Grid of green & black in the other lens ❸ is altered with Twirl filter. Circles are added to the bottom of the letter "A" ❹, Pathfinder filter unites them. Letter is imported into Adobe Dimensions™ which adds perspective. Brush stroke ❺ is created with the Calligraphy tool and then painted with multi-color Gradient. The spreadsheet chart ❻ is converted into an Acrobat PDF file and imported. Light bulb glow ❼ is achieved with Shape Blending tool. Punk filter creates spikes ❽ on globe. Entire ad was created and spell checked using Adobe Illustrator 5.5.

Adobe, the Adobe logo, Adobe Illustrator, Adobe Photoshop, Photoshop, PostScript, Acrobat, Distiller, Adobe Dimensions, and the tagline, "If you can dream it, you can do it" are trademarks of Adobe Systems Incorporated which may be registered in certain jurisdictions. All other marks and trademarks are the property of their respective companies. © 1994 Adobe Systems Incorporated. All rights reserved.

# THE STATE *of* the MIND.

## Adobe Illustrator 5.5

Adobe is pleased to announce a mind blowing upgrade. The leading illustration and page design program for Macintosh® now becomes a more powerful, all-encompassing creative resource. Adobe Illustrator™ 5.5 for Macintosh runs native on the new Power Macintosh®, and it's loaded with features that add power and automate tasks once difficult or impossible in other drawing programs. New features include trapping and text handling tools like tabs, smart punctuation and a spell checker. And you can import, export and edit any document from any application using the Acrobat Portable Document Format (PDF). You also get a free CD-ROM with 220 Adobe Type 1 fonts, tips and techniques, clip art and more. This upgrade has it all. Now, with Adobe Illustrator™ 5.5, what the mind wants, the mind gets. Call **1-800-521-1976** for information and your nearest Adobe™ Authorized Reseller.

CALL NOW FOR YOUR
**UPGRADE**
TO THE NEW ADOBE ILLUSTRATOR 5.5 FOR MACINTOSH®, WHICH INCLUDES ADOBE ACROBAT, 220 ADOBE TYPE 1 FONTS, AND THE ADOBE ILLUSTRATOR DELUXE CD-ROM.

If you can *dream* it, you can *do* it.™

Adobe

# ENOUGH CREATIVE OPTIONS TO PUT YOU IN A STATE *of* RAPTURE

## Adobe Illustrator 5.5

CALL **1-800-521-1976** TODAY AND UPGRADE TO ADOBE ILLUSTRATOR 5.5 FOR ONLY $99. (OR $149 IF YOU HAVE A VERSION EARLIER THAN 5.0).

"Upgrade" doesn't even start to say it. New text tools, trapping, and Adobe Acrobat give you unheard of value in a single box. It's a no-brainer that'll take your mind as far as it can go.

Version 5.5 comes bundled with **Acrobat Exchange** and **Acrobat Distiller™**. These breakthrough tools give you the freedom to create PDF files from any application, retaining all of the document's original formatting, graphics and color. Import these, and you'll be able to perform touch-up editing on a page-by-page basis. Adobe Illustrator 5.5 also includes the **Deluxe CD-Rom Edition** which contains QuickTime™ movies of tips and techniques, clip art, documentation, tech notes, and more. This upgrade also contains 220 **Adobe Type 1 fonts** to further expand your graphics options.

Adobe™

# New Products

THE LATEST MACINTOSH RELEASES

by Cameron Crotty

THIS SECTION COVERS MACINTOSH PRODUCTS FORMALLY ANNOUNCED BUT NOT YET EVALUATED BY *MACWORLD*. UNLESS OTHERWISE STATED, THE MINIMUM REQUIREMENTS FOR OPERATION ARE A MAC PLUS, WITH 1MB OF RAM, RUNNING SYSTEM 6. ALL INFORMATION AND PERFORMANCE CLAIMS ARE SUPPLIED BY THE PRODUCT VENDOR AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY *MACWORLD*. ALL PRICES ARE SUGGESTED RETAIL. PLEASE CALL VENDORS FOR INFORMATION ON AVAILABILITY.

## HARDWARE

### APS T 520

This hard drive fits in any PowerBook or Duo and provides just over 500MB of formatted storage. The APS T 520 features an average access time of 26ms and comes bundled with the company's PowerTools hard drive utility software. Dantz Development's DiskFit Direct backup software is also included. One version of the drive comes in an external enclosure with a rechargeable battery that lasts up to four hours. Internal $899; external (Companion II enclosure) $989; AC/DC portable with battery $1039; configured for LaserWriter Pro 630 $949. APS Technologies, 816/483-6100, 800/235-2752; fax 816/483-3077.

*APS T 520*

### ATS Power House

When there just isn't enough room in your Macintosh's case for all the cool stuff you want to add, step up to an enclosure like this one. The Power House is constructed of anodized aluminum; sits on four casters; and features a 450-watt power supply, ten drive bays, an audio speaker, an extra fan, and an LED indicator panel to show SCSI and floppy drive activity. The case can accommodate the guts of a Quadra 900 or 950, or a Mac II, IIx, or IIfx. $1200. ATS, 404/455-6225; fax 404/455-9803.

### ClearVueColor 17 and 20T

The first of these two multiresolution color monitors is a 17-inch display that features a 0.26mm dot pitch and support for resolutions from 640 by 480 pixels to 1024 by 768 pixels at 50Hz to 100Hz. The second is a 20-inch Trinitron display that features a 0.31mm aperture pitch and supports resolutions up to 1280 by 1024 pixels at 50Hz to 160Hz. Both monitors have digital controls and can remember up to 22 different settings. The monitors are also MPR II–compliant. 17, $1049; 20T, $2149. RasterOps, 408/562-4200, 800/729-2656; fax 408/562-4033.

*ClearVueColor 20T*

### CryptoCom V.32bis

When you put one of these modems on either end of the line, all that would-be eavesdroppers can hear is DES-encrypted data. The CryptoCom V.32bis is a standard 14.4-Kbps data modem that supports all the standard error-correction and data-compression protocols, including MNP Class 10 for cellular communications. Additionally, if two CryptoComs are talking to each other, they will encrypt their transmissions. $895. Western DataCom, 216/835-1510, 800/262-3311; fax 216/835-9146.

### DEClaser 5100

This 600-by-600-dpi laser printer comes with 2MB of RAM (expandable to 66MB); it features simultaneously active AppleTalk, serial, and parallel ports, with active emulation switching. The printer supports PostScript Level 2 and HP PCL 5E. Several upgrade options are available, including a 1200-dpi-resolution board; a 128MB hard drive; and interface cards for connecting to Token Ring and Ethernet networks supporting Ether-

*DEClaser 5100*

Talk, NetWare, LAT, or TCP/IP. $2199; 1200-dpi upgrade (requires 10MB of printer memory) $299; 128MB internal hard drive $499; Multi-Protocol Ethernet Network Card $499; Multi-Protocol Token Ring Network Card $599. Digital Equipment Corp., 508/493-5111, 800/777-4343; fax 508/493-8780.

### DGR Max

If your house were too small, you'd move into a larger one, so why not do the same for your Mac? This expansion chassis for Mac LC, LC II, LC III, and Performa computers provides four PDS slots, a 40-watt power supply, and an additional bay for a larger hard drive (up to a half-height 3.5-inch drive mechanism). The Multi Max includes all this but puts an internal, tray-loading, double-speed, multisession Photo CD CD-ROM drive in the bay. The Multi Max also adds two internal amplified speakers. $299; Multi Max $799. DGR Technologies, 512/476-9855, 800/235-9748; fax 512/476-6399.

### Duo RAM Upgrades

If you own a PowerBook Duo, you can use these RAM upgrade cards. A certified technician must install them, but once you've got that covered, you can boost your total on-board memory to up to 32MB. 4MB $199; 8MB $399; 14MB $650; 20MB $1250; 28MB $1950. Simple Technology, 714/558-1120, 800/367-7330; fax 714/558-0997.

### EasyNet

Who would have thought that you'd be buying Ethernet transceivers as cheaply as you bought LocalTalk transceivers a few years ago? The EasyNet connectors plug into any Mac or device with a built-in Ethernet port and connect to either a 10BaseT or thin Ethernet network. Each box measures 2.25 inches by 1.5 inches by 0.75 inch and weighs about 2 ounces. $69. Dayna Communications, 801/269-7200, 800/531-0600; fax 801/269-7363.

### MacWaveMaker

Plugging this 7-inch NuBus card into your Macintosh gives you a MIDI synthesizer that has stereo line-level outputs and MIDI-in and -out ports. The MacWaveMaker is a 32-voice polyphonic synthesizer with 357 instrument sounds; 48 digital echo, reverb, and chorus algorithms; and 15 different drum kits with over 400 percussion sounds. The board supports General MIDI, Roland MT-32, and Kurzweil Super-Orchestral MIDI sound tables. $695. Morning Star Solutions, 508/692-0373; fax 508/692-6535.

### Magic RAID

These dual-drive arrays come in 1GB, 1.4GB, 2GB, and 3.4GB sizes, and are populated with Quantum and Seagate mechanisms. All the arrays have average access times of 4ms and sustained data-transfer rates of 8MBps, except for the 3.4GB model, which can reach 3.7ms and 10 MBps. All the arrays support RAID levels 0, 1, 4, and 5. 1GB $1899; 1.4GB $2399; 2GB $2699; 3.4GB $4338. Mac Products, 512/472-8881; fax 512/499-0899.

### NPS 530

Small enough to fit in your hand (almost), this print server connects nearly any printer with a serial port to a 10BaseT network. The NPS 530 supports NetWare, LAN Manager, LAN Server, TCP/IP, and EtherTalk. $599; without TCP/IP $499. Axis Communications, 508/777-7957; fax 508/777-9905.

*NPS 530*

### NuMedia 2

To make your thunderbolts and lightning louder and more frightening, you could try this 7-inch NuBus card. The card provides 16-bit stereo sound at sample rates up to 48kHz and has stereo line-level inputs and outputs for recording and playback. Since the card depends on the AT&T 3210 DSP chip, it is compatible with the Adobe AV DSP Power plug-in for Photoshop 2.5.1, and you can use it

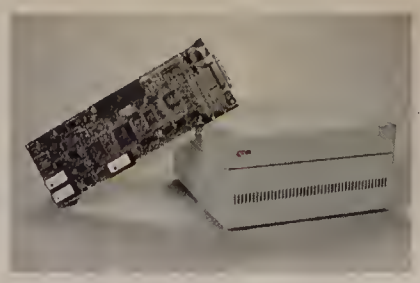
*continues*

to accelerate any graphics application that accepts Photoshop plug-ins. The NuMedia 2 ships with Killer Tracks Royalty-Free Music CD and Opcode's Audio Shop 2.0. $695. Spectral Innovations, 408/955-0366; fax 408/955-0370.

**Pocket EtherTalk Adapter**
You never know when you're going to have to network, but with Xircom's adapter, all you need to plug into an EtherTalk net is a SCSI port and the appropriate software. The Pocket EtherTalk Adapter features both DB-25 and HDI-30 ports, which makes it appropriate for PowerBooks or for providing a pass-through SCSI port for daisy-chaining other devices. The adapter draws power from the host Mac's ADB port. PET-10BT (10BaseT only) $349; PET-10BC (10BaseT and thin Ethernet) $399. Xircom, 818/878-7600; fax 818/878-7630.

**Power Poker**
A poker-playing and tutorial program, Power Poker includes 77 poker variations, and players can design their own. Built-in artificial intelligence learns your playing patterns, and the software features hand analysis, displays of historical hand strengths, and performance charts. Also, up to ten human players can play each other via LocalTalk or Ethernet. $49.95. Electronic Arts, 415/571-7171; fax 415/570-5137.

**Power RAID Storage System**
Put scads of data at your fingertips with these two-drive SCSI arrays. The



*Power RAID Storage System*

1GB and 1.4GB arrays feature 3.5-inch Quantum drive mechanisms, while the 2GB and 3.4GB arrays use 3.5-inch Seagate mechanisms. All of these arrays have average access times of 4ms. A 7-inch NuBus, SCSI-2 Fast and Wide card is included with the arrays. To turn these devices into RAID systems, you have to purchase additional software. The PRSS Lite software supports RAID levels 0 and 1, and the PRSS Full software supports RAID levels 0, 1, 4, and 5. 1GB $1709; 1.4GB $2399; 2GB $2699; 3.4GB $4148; PRSS Lite $190; PRSS Full $365. DGR Technologies, 512/476-9855, 800/235-9748; fax 512/476-6399.

**PowerR Presenter 575**
This output adapter plugs directly into the motherboard of the Macintosh LC 575 or the corresponding Performa model. It provides D-15 (Macintosh) and HD-15 (VGA) connectors for color or monochrome LCD panels, external monitors, and projectors. A version that supports the Mac LC 520 and LC 550 and corresponding Performa models is available as well. $129. PowerR, 206/547-8000, 800/729-6970; fax 206/285-0260.

**PrecisionColor Display/21**
There's something undeniably large about a 21-inch display, something that makes previously ordinary file icons seem tiny. This 21-inch multiresolution color monitor features a 0.28mm dot pitch, a maximum resolution of 1360 by 1024 pixels at 71Hz, and digital controls. Radius's Dynamic Desktop software, which allows instant resolution and bit-depth switching without restarting, is included. $2499. Radius, 408/434-1010, 800/227-2795; fax 800/966-7360.

*PrecisionColor Display/21*

**QuickArray**
Handling RAID Level 0 data striping at the hardware level makes these SCSI-2 arrays appear as single drives to your Macintosh. The QuickArrays feature access times equivalent to 4ms and are able to achieve data-transfer rates of 10 MBps. Each array comes with PLI's QuickSCSI-F NuBus SCSI accelerator. 1GB $3610; 2GB $4325; 4GB $7256. PLI, 510/657-2211, 800/288-8754; fax 510/683-9713.

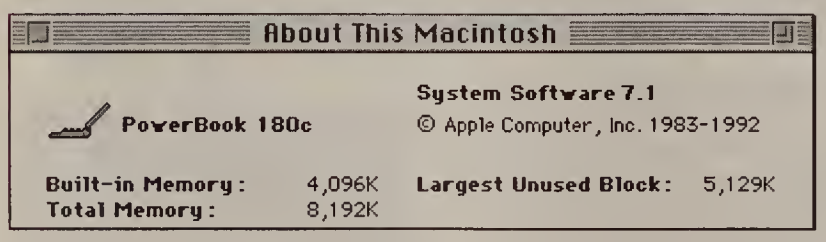
**QuickSCSI-F**
Why settle for data that crawls in through your built-in SCSI port at a measly 4MB per second when you can throw wide the gates to an information torrent? The QuickSCSI-F is a 7-inch NuBus SCSI-2 card that supports data-transfer rates up to 10 MBps. Macs with the card installed can boot from drives connected to it, and the QuickSCSI-F supports disk mirroring for instant backup. $699. PLI, 510/657-2211, 800/288-8754; fax 510/683-9713.

**SlimWriter**
At 12 inches by 8.5 inches by 1 inch, and 2.6 pounds (with battery), this 360-by-360-dpi thermal printer could nearly fit into one of the side pockets of your PowerBook case. The SlimWriter prints on plain paper, thermal bond paper, envelopes, and transparencies, all up to 8 inches wide. The printer works off a standard camcorder battery, which provides 50 minutes of operation (35 to 50 pages); high-capacity batteries are also available. The unit comes with an AC adapter. The required Macintosh adapter package includes a serial cable and driver software. The manufacturer estimates that the SlimWriter can print about 1 to 1.5 pages per minute. $399; Mac Pack $60. Atlantic Technologies, 910/350-0700, 800/779-7705; fax 910/392-7093.

*continues*


# Double your RAM.

Just install RAM Doubler™ software in your Mac and it doubles your RAM. It's that easy. No more hassles, just more RAM.




RAM Doubler is an extension that works by reclaiming memory not being used. MacWEEK says "RAM Doubler couldn't be easier to use." It is the latest from Connectix, the Macintosh memory experts and makers of the award-winning CPU and MODE32.

RAM Doubler is affordable at $99 SRP with a 30-day money back guarantee. Get RAM Doubler wherever great software is sold.

CONNECTIX

**800-950-5880 ext. 37**

or 415-571-5100, fax 415-571-5195

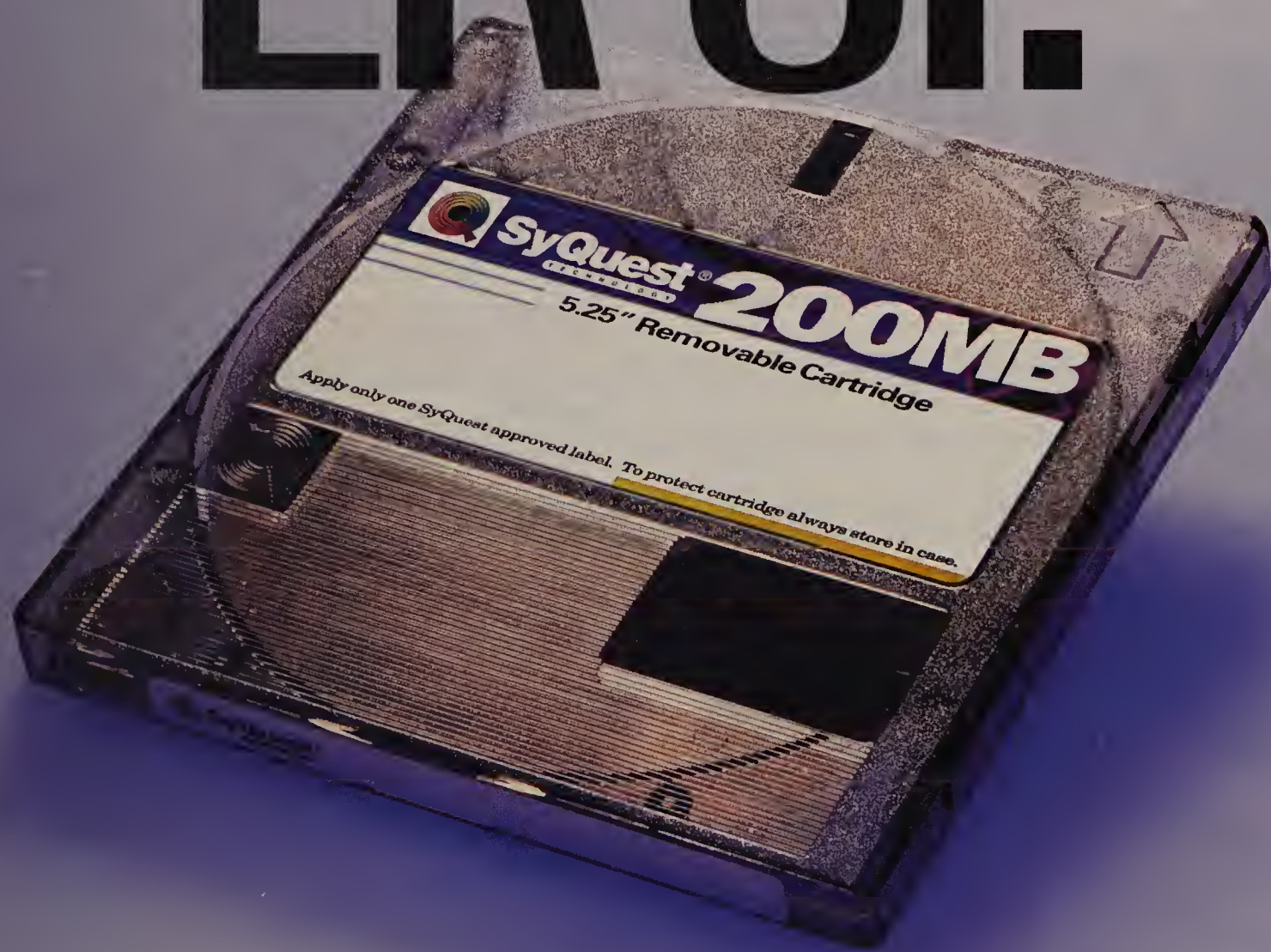
MACWORLD MW EDITORS' CHOICE

©1994 Connectix Corporation. RAM Doubler requires Mac II (with PMMU) or better (68030 or 68040 processor) with 4 MB RAM & System 6 or 7. RAM Doubler is not compatible with Mac LC, Classic, Plus, SE or PowerBook 100. RAM Doubler, CPU and MODE32 are trademarks of Connectix. All other trademarks are the property of their respective holders.

***PowerMac Version Available Soon!***

**Circle 189 on reader service card**

# FILL 'ER UP.




## Introducing The New SQ5200C Drive. The Biggest Reason Yet To Join Our 5.25" Family.

The SQ5200C delivers big in data-intensive applications such as desktop publishing and multimedia, with 200MB of storage, hard drive performance, and full read/write compatibility with all SyQuest 44MB and 88MB cartridges. Plus all the advantages of removability, like unlimited capacity, off-line storage, system sharing, fast backup, and unbeatable data security and transportability.

FEATURING SyQuest REMOVABLE TECHNOLOGY

*Look for this logo when buying removable storage products.*

*Sales of more than 6 million cartridges and 1 million drives have made SyQuest the world standard in removable storage.*

If you're a SyQuest user, it's the best way to migrate to the next level of storage. If you're looking to SyQuest for the first time, it's the biggest reason yet to join the world standard. To find out how to get more mileage out of your demanding applications, call 1-800-245-2278.

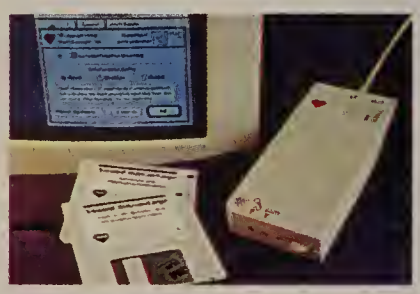
SyQuest TECHNOLOGY

The World Standard.

1-800-245-2278. SyQuest Technology, Inc., 47071 Bayside Parkway, Fremont, CA 94538. SyQuest and the SyQuest logo are registered trademarks of SyQuest Technology, Inc © 1994 SyQuest Technology.

**Circle 249 on reader service card**

**Sound Advantage Hardware**
If you want to work with sound, but your Mac doesn't have built-in sound input, this device connects to your Mac's serial port and provides a built-in microphone and two input jacks for an external microphone and a line-level source such as a CD player. The Sound Advantage Hardware also features a sliding volume control and a pass-through serial port. The device's maximum sample rate is 22kHz. The hardware ships with a software driver, which also provides voice-activated recording. Built-In Mic Options software, sold separately, works with Macs that have a built-in sound-input port, provides voice-activated recording, and controls digitization quality by tweaking the sample rate and the compression ratio. Requires System 6.0.7. $160; Built-In Mic Options $88. Heart Computer, 214/771-7511; no fax.


*Sound Advantage Hardware*

**SoundMemo**
Take a memo: this software can both record and play back sound files. When recording, SoundMemo automatically starts recording when dictation begins and stops when the speaker pauses. The pauses are automatically tagged and can be used to control playback. You can choose from Good, Better, and Best sound settings, or you can fine-tune recording sessions by choosing from 8-bit or 16-bit sample settings, sample rates up to 48kHz, and a range of compression ratios. SoundMemo is compatible with most current third-party sound-input boards. Requires System 7. $79.95. Imagemakers Software Systems, 905/472-0151, 800/203-6366; fax 905/294-0040.

**SuperMatch 21T XL**
A 21-inch multiple-resolution color monitor, the 21T XL features a Mitsubishi aperture grille tube (0.31mm aperture pitch) and can display resolutions up to 1600 by 1200 pixels. The monitor has digital controls (including a three-way adjustable white point) and a microprocessor that remembers the settings for each viewing mode. This display complies with both the MPR II emissions guidelines and the Energy Star guidelines. $2599. SuperMac Technology, 408/541-6100, 800/334-3005; fax 408/735-7250.

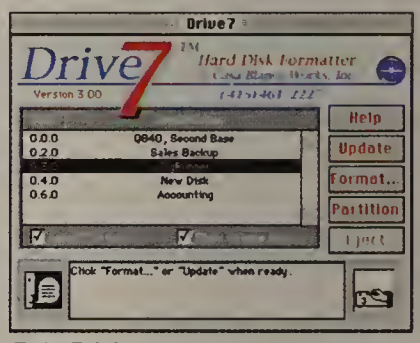
**TV Elite for Macs**
With this external video converter, you can put your Mac's 640-by-480-pixel–resolution video on a television. The box has both composite video and S-Video outputs, as well as an RGB monitor output, so your video appears on your television and monitor simultaneously. $399. Advanced Digital Systems, 310/926-1928, 800/888-5244; fax 310/926-0518.

**Viking Duo RAM Upgrades**
Having a PowerBook Duo is cool, but running out of memory is not. These RAM upgrades come in 4MB, 8MB, 12MB, and 20MB sizes and fit in any of the Duos, from the 210 to the 270c. You can also install the 20MB card and then piggyback an 8MB daughtercard on top of it to put a total of 32MB in your sleek gray road machine. 4MB $275; 8MB $525; 12MB $975; 20MB $1575; 8MB daughtercard $800; 28MB combo $2375. Viking Components, 714/643-7255, 800/338-2361; fax 714/643-7250.

**XGT 6 X 8**
Instead of scanning your paper drawings, you can skip the middle machine and sketch your ideas directly into your Mac with this graphics tablet. The XGT 6 X 8 has a 6-by-8-inch active area (1270-lpi resolution) on an 8.5-by-11-inch frame. The pad plugs into the ADB port and comes with a cordless, pressure-sensitive pen (256 levels). Driver software is included. $399. Kurta Corp., 602/276-5533, 800/445-8782; fax 602/276-9007.

## SOFTWARE

**BLAST Professional for Macintosh**
This cross-platform telecommunications software relies on a proprietary transmission protocol to send your files up to two times faster than Xmodem. To realize that speed increase, your Mac must be talking to another machine that is also running the BLAST software; but BLAST Professional does support the more common Xmodem, Ymodem, and Zmodem protocols. The software can also perform terminal emulation (Wyse 50, VT52, VT100, VT220, and TTY), and it has a scripting language for automating tasks. $139. BLAST, 919/542-3007, 800/242-5278; fax 919/542-0161.



*Drive7 3.0*

**Drive7 3.0**
The latest version of this drive-formatting and -partitioning software features an updated interface, plus support for SCSI-2 and Apple SCSI Manager 4.3. The software package includes an application and a control panel, both of which now display logical unit numbers and volume names. Working with SCSI Manager 4.3, the application can update, format, or initialize all connected SCSI volumes from a single command.
*continues*

Circle 8 on reader service card

WHAT'S QUEER WITH THIS SENTENCE?
READ IT AGAIN. NOW ONCE MORE. SEE IT YET? OUR EYES CAN BE DUPED. BUT IF THIS WAS ONE OF OUR MONITORS, THERE'D BE NO TRICKERY. THEY HAVE A VERTICAL REFRESH RATE OF 75 HZ. WHICH IN HUMAN SPEAK, MEANS A FLICKER-FREE IMAGE. WANT MORE ENLIGHTENMENT? CALL 714-530-9984.
TRIAM
Circle 211 on reader service card

If they're out there drawing, you're not drawing them in. But our new Polaview™ 3000 LCD panel can help you make a few important improvements — graphically speaking.

**16.7 million colors are hard to ignore**

The Polaview 3000 LCD panel offers the latest in LCD projection panel technology with features certain to make people sit up and notice. Its 16.7 million colors make any chart or diagram come alive. Active matrix technology provides crisp, detailed images.

**This much control can be riveting**

The remote mouse is more than just point and click. It lets you point to and enlarge images, unmask data, invert type, and time sequences. Even in different languages. Keep your audience focused with new looks all the time.

# ARE AUDIENCES CREATING THEIR OWN GRAPHICS FOR YOUR PRESENTATIONS?

**Wake up to full multimedia presentations**

With integrated stereo sound and video, virtually anything goes. The sound is so sophisticated it can even do the talking for you. The Polaview 3000 LCD Panel is totally compatible with PC, Macintosh and video sources. And with the Polaview 1800 and 1500 LCD panels, Polaroid has a solution for every need — and budget.

**From the inventors of instant imaging**

Now you can change your presentation anywhere — even minutes before you present — and still make it perfect. Polaroid has always understood how valuable your time is. Whether your image is on film or on screen, we're committed to making it shine.

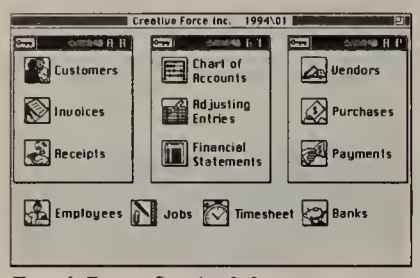
**Get a free Polaview 3000 demo disk!**
**Call 1-800-816-2611 ext. 951 today!**

**Polaroid**

**Circle 119 on reader service card**

The control panel also now includes a caching feature that improves drive performance. $79.95. Casa Blanca Works, 415/461-2227; fax 415/461-2249.

**Fourth Power Service 2.0**
This 4th Dimension–based accounting software is designed for service-oriented companies and can handle job records, estimating, and quoting; proposal production; time tracking and billing; and forms creation. Fourth Power Service can automatically create everything from invoices to purchase orders, and it comes with built-in report editors and a word processor. $795. Honeybee Software, 514/954-0768, 800/667-1233; fax 514/875-2940.



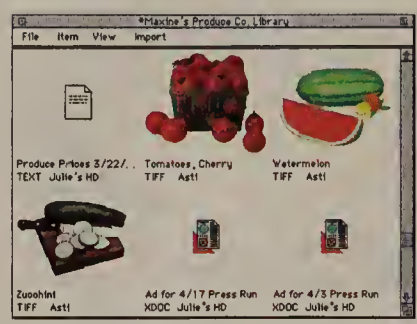
*Fourth Power Service 2.0*

**Icontrol Human Resources**
This software addresses such human-resources issues as employee tracking, including work history, reviews, and advancement/transfer requests. Icontrol HR can also track job applicants, benefits, and injuries and illnesses. The software generates required reports, including OSHA 101 and 200. 8MB min. memory; requires 68040. $1995. Icontrol, 605/886-3848, 800/222-4266; fax 605/886-4180.

**MusicTime**
If you're musically inclined, this software can help your Mac be that way also. If you have a MIDI instrument, MusicTime can record your performance and create sheet music that you can edit and print out. Alternately, you can compose by hand, with up to eight staves per system and up to four voices per staff. The software can also play notes as you type, acting as if your computer keyboard were a piano keyboard. 2.5MB min. memory; requires Mac Classic. $149. Passport Designs, 415/726-0280, 800/443-3210; fax 415/726-2254.

**PortfolioMaker**
If you're an artist, sending out slide portfolios to all and sundry can be an expensive proposition. But if you can scan or otherwise digitize your work, this software packs up to twenty 24-bit PICT images onto a single high-density floppy disk that you can duplicate and send out. You decide in what order to display the images, and you can optionally add text comments. The recipient can browse through the images and the text but cannot make any changes. Image size is approximately 3 by 5 inches (256 by 384 pixels). 4MB min. memory; requires System 7, color. $129. CRIT, 410/426-7733; fax 410/426-7768.

**RRKeyFonts/Mac**
Trying to describe a keyboard shortcut can be an exercise in frustration (or at least in long, hyphenated phrases). This font pack consists of RRMacCaps, depicting keys like ⌘, option, return, and control; RRKeyLetters, showing the alphabet, numbers, and punctuation surrounded by keylike boxes; and RRWinSymbols, depicting common Windows symbols and cursors. The package ships with both TrueType and PostScript Type 1 versions of the fonts. $49. RoadRunner Computing, 504/346-0019; fax 504/346-8144.



*Touch*

**Touch**
An XTension for QuarkXPress that creates and manages libraries of documents, including text files, graphics, and Quark files. Entries can be sorted in import order or by their volume, folder, file name, and type. Touch items may be dragged directly from their library into a Quark document and placed—a preferences dialog controls sizing of graphics imported in this way. Touch libraries can also include items from Aldus Fetch catalogs. Requires QuarkXPress. $179. Vision's Edge, 408/748-8411, 800/800-8476; fax 408/748-9584.

**Word for Word—Macintosh 6.0**
If you frequently need to translate files in a variety of different formats, you might consider the latest version of this document-conversion software. Word for Word reads and writes nearly 150 text, database, and graphics standards, including most common PC and Mac formats. If you have System 7, the software works with Apple's Easy Open extension, and you can convert documents by dragging and dropping them on the program icon. $149. Mastersoft, 602/948-4888, 800/624-6107; fax 602/948-8261.

**XPreview**
Preview your Quark documents without firing up the program. This software displays the document's vital statistics, including the colors, fonts, and imported graphics used, along with miniatures of each page of a file saved using the included Preview Editor Lite XTension. XPreview can have several documents open at once, and users can print out information about each document. Requires System 7. $79. Vision's Edge, 408/748-8411, 800/800-8476; fax 408/748-9584.

## CD-ROMS

**CNN Time Capsule: 100 Defining Moments of the Year**
From rap music to hairstyles to interest rates, this package takes you on a tour of 1993. The disc includes 90 minutes of

*continues*

Introducing the $139 investment no Mac user can afford to be without...

*"Don't take chances...Get the ultimate protection: Back-UPS from APC."*

PC World Top 20 Upgrade

Blackouts, brownouts, sags... if you use computers, your bottom line is directly linked to your power line. The fact is, your data and hardware are vulnerable to problems that surge suppressors and power directors just aren't equipped to handle.

Call for your FREE 60 page PC power protection handbook!

Now there's an Uninterruptible Power Supply (UPS) to suit any budget. Back-UPS® are perfect protection for LAN servers, personal computers, phone/fax systems, POS equipment, or any other device that can go down when the power does. If lightning is a concern, Back-UPS are even backed by a $25,000 insurance policy against surge damage to your equipment (see details).

So don't wait for the inevitable power problem to rob your business. Protect your productivity with Back-UPS, available where quality computer products are sold.

*APC Back-UPS provide instantaneous battery power during power disturbances, so your data and hardware are safe!*

APC™
AMERICAN POWER CONVERSION
800-800-4APC, dept. D7

Local phone and fax for; **Germany** - Fax: 089.950.51.66, **United Kingdom** - Fax: 81.667.1947, **France** - NoVert: 05.09.24.07

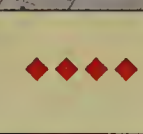
© 1993 Trademarks are property of their respective owners. * Suggested list price.



Circle 72 on reader service card

*"FastTrack Schedule...matches or exceeds the competing products in all aspects of project scheduling."—Windows Magazine*

*"If you're looking for a quick and easy way to create Gantt charts, this program might be just the one for you."—MacUser*



*"...An excellent choice for anyone whose primary need is to create precise, presentation-quality Gantt charts."—MacWEEK*

# THE PROJECT SCHEDULING SOFTWARE THAT'S TOPPING THE CHARTS.

*Special Offer:*
**$179**
*Money Back Guarantee*

FastTrack Schedule from AEC Software is so quick, powerful and easy to use, no wonder it's a hit with Fortune 500 companies like 3M™, Procter & Gamble, GE, and McDonnell Douglas. In fact, leading computer publications like *Windows Magazine, MacWEEK* and *MacUser* have awarded it the highest ratings in its class.

In just minutes, you can create project schedules that will enhance both your productivity *and* presentations. Plus, there's no need for cumbersome project management packages or time-consuming drawing programs.

Simply click and drag–or use your keyboard–to create start and end dates. Outline multi-level tasks and link activities to show dependent steps. Further enhance your schedules with custom bars, milestones, colorful graphics, and flexible timeline scales. And because FastTrack Schedule runs on either Windows or Macintosh, files built on one platform can be opened on the other.

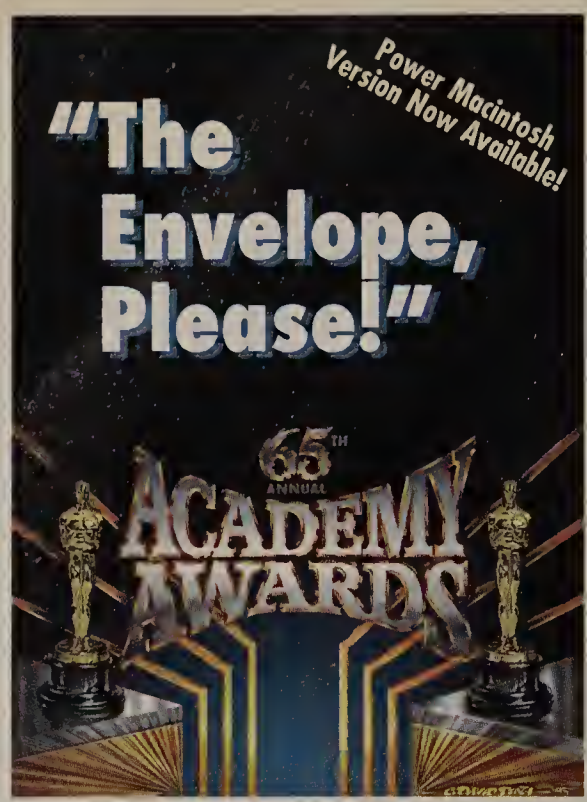
To order, or for more information, call AEC today. And let FastTrack Schedule put you on top of your projects.

*800-450-1982*

AEC SOFTWARE

AEC Software, Inc., 22611-113 Markey Court, Sterling, Virginia 20166 • Telephone: 703/450-1980 • Facsimile: 703/450-9786. ©1994 AEC Software, Inc. All rights reserved.

**Circle 44 on reader service card**




© A.M.P.A.S. ®

**"And the winner is... Kai's Power Tools™ 2.0!"**

★★★★★ Publish March 1994 · MACWORLD MW ★★★★★ MAY 1994 · MacWEEK NOVEMBER 1993 ♦♦♦♦♦ · RATED NEWMEDIA MAGAZINE AWESOME APRIL 1994

C. David Piña uses KPT to create stunning graphics for television's biggest award spectaculars.

In-demand digital artisans like C. David Piño—best known for creating unforgettable titles for the Academy Awards, Emmy Awards and Miss America telecasts—know how indispensable the five-star Kai's Power Tools is to their stock and trade. "The challenge in doing a show like the Academy Awards is to create a set of graphics that work together," Piño says. "With KPT's Gradient Designer, I created hundreds of graphics featuring letterform surfaces and beveled edges that looked as if they had all been formed from the same block of gold."

**Your Complete Imaging Solution**

Kai's Power Tools delivers the production tools to create imaging with flair! Watch your creativity skyrocket with 33 fantastic extensions and filters that plug into Photoshop, Pointer, Pixel Point Pro and more!

Best of all, KPT is a complete, standalone solution, because it includes Color-It!, the 32-bit paint and imaging program — a $149 value FREE!

Whether you're a Hollywood pro or a rising star, Kai's Power Tools 2.0 will move you to higher levels of creative expression.

**Ask for Kai's Power Tools 2.0 at:**

Computerworx 800.326.0092
COMPUSA 800.COMPUSA
Computer City 800.843.2489
Egghead Software 800.344.4323
Electronic Boutique 800.800.0032

**Own KPT 1.0? Upgrade Today! Call 1.800.472.9025**

HSC Software, 1661 Lincoln Blvd. Suite 101, Santa Monica, CA 90404. Phone: 310.392-8441. Fax: 310.392.6015.

©1994 HSC Software Corp. HSC is a registered trademark and Kai's Power Tools is a trademark of HSC Software Corp. All other product names are trademarks of their respective owners.

**Circle 7 on reader service card**




broadcast footage from CNN, along with descriptive text and analysis. The clips are organized into such categories as sports, business, national news, and world news. You can also flag your personal favorites and file them in their own category. $29.95. Vicarious Entertainment, 415/261-1900, 800/908-9966; fax 415/299-8126.

*CNN Time Capsule*

**Visual Symbols**

Clip art can appear cartoonish, but this collection of images is closer to real life. The discs in this series contain pictures of items photographed against white backgrounds. The seven titles are Everyday Objects 1, 2, and 3; Just Tools; Just Hands; Just Documents; and Metaphorically Speaking. All discs are in Photo CD format and contain both screen- and print-resolution files of each image. Each disc contains over 100 images. $129. CMCD, 415/703-9900; fax 415/703-0711.

## ACCESSORIES

**PowerPlate QT1**

When you're snapping photos, you don't want to run out of power. This battery power system attaches to the bottom of Apple's QuickTake 100 digital camera and wraps up and around the side to plug into the QuickTake's power port. You can recharge the PowerPlate with an AC adapter in about five hours (even while you are taking pictures), and the unit carries three times the power of the QuickTake's internal batteries, providing enough juice for roughly 600 photos. $129. Technöggin, 513/321-1777, 800/305-7936; fax 513/321-2348.

**RollerMouse**

This ADB trackball has a 5-inch-square footprint and four programmable buttons. The RollerMouse ships with driver software, but you control the resolution and button functions with a bank of DIP switches on the bottom of the unit. The buttons can be set to send common key combinations, such as ⌘-O, ⌘-N, and ⌘-Z. $119.95. CH Products, 619/598-2518, 800/624-5804; fax 619/598-2524.

**SCSI Sentry**

Keeping long SCSI chains operating can require an advanced degree in magic. This device plugs into your SCSI chain and actively controls the voltage and impedance on the chain. The idea is that the less noisy your SCSI lines are, the more likely your signal is to make it through unscrambled. The product requires an AC adapter (included). $99. APS Technologies, 816/483-6100, 800/235-2752; fax 816/483-3077.

**SyGuard**

You may not think that your SyQuest drive exists in a high-contamination environment, but when was the last time you dusted your workstation? This plastic guard fits over the face of any 5.25-inch-format SyQuest drive while a cartridge is inserted. The SyGuard's rubber gasket seals out dust, debris, smoke, and other particulate matter that can contaminate your cartridge or drive mechanism. $8.99. APS Technologies, 816/483-6100, 800/235-2752; fax 816/483-3077.

## BOOKS

**Software Development: A Legal Guide**

Written in plain English, this handbook for software developers covers everything from employment agreements to intellectual property rights. Author Stephen Fishman writes about when to use copyrights and trademarks; how to draft employment, nondisclosure, and consultant agreements; how to obtain permission to use materials in multimedia projects; and how to avoid copyright infringement. An included disk contains contracts, agreements, and sample letters covered in the book. 300 pages. $44.95. Nolo Press, 510/549-1976, 800/992-6656; fax 510/548-5902.

*Software Development: A Legal Guide*

**Zap!**

Subtitled "How your computer can hurt you—and what you can do about it," this book covers computer-related health issues, including eyestrain, carpal tunnel syndrome, and back problems. *Zap!* discusses these health hazards and analyzes the solutions available to users. Author Don Sellers makes suggestions on how to avoid or correct problems and provides a resource list of furniture manufacturers, software developers, accessory sources, newsletters, books, government agencies, and online resources. 150 pages. $12.95. Peachpit Press, 510/548-4393, 800/283-9444; fax 510/548-5991. m

To have your product considered for inclusion in *New Products*, send an announcement with product name, description, minimum memory, peripherals required, pricing, company name, phone number, and fax number to New Products Editor, *Macworld*, 501 Second St., San Francisco, CA 94107. *Macworld* reserves the right to edit all product announcements.

**It's easy.**
**It's exciting.**
**It's economical.**
**It's eventful.**

**It's e•World.**

## Enter e•World™ now with your *free* starter kit.

I'd like to know more about the exciting, new on-line service from Apple.
Please send me the eWorld starter software package—a $19.95 value—free.

Name _____

Company Name _____

Home Address _____ Apt./Suite # _____

City _____

State _____ ZIP _____ Phone (  ) _____

Check one: ☐ 1.4MB Disk ☐ 800K Disk

eWorld™

23MW894

*©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. eWorld and the eWorld logo are trademarks of Apple Computer, Inc. The eWorld logo is copyrighted in the name of Apple Computer, Inc. Offer does not include on-line charges. Offer expires 10/31/94. To enter eWorld, you'll need the free eWorld software, an Apple Macintosh computer with system software version 7.0 or later and at least 4 megabytes of RAM, a phone line, and a Hayes-compatible modem.*



**It's easy.**
**It's exciting.**
**It's economical.**
**It's eventful.**

**It's e•World.**

## Enter e•World™ now with your *free* starter kit.

I'd like to know more about the exciting, new on-line service from Apple.
Please send me the eWorld starter software package—a $19.95 value—free.

Name _____

Company Name _____

Home Address _____ Apt./Suite # _____

City _____

State _____ ZIP _____ Phone (  ) _____

Check one: ☐ 1.4MB Disk ☐ 800K Disk

eWorld™

23MW894

*©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. eWorld and the eWorld logo are trademarks of Apple Computer, Inc. The eWorld logo is copyrighted in the name of Apple Computer, Inc. Offer does not include on-line charges. Offer expires 10/31/94. To enter eWorld, you'll need the free eWorld software, an Apple Macintosh computer with system software version 7.0 or later and at least 4 megabytes of RAM, a phone line, and a Hayes-compatible modem.*

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 11370 BRIDGETON, MO

POSTAGE WILL BE PAID BY ADDRESSEE

eWorld Starter Kit
Apple Computer, Inc.
PO Box 4493
Bridgeton MO 63044-9718

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 11370 BRIDGETON, MO

POSTAGE WILL BE PAID BY ADDRESSEE

eWorld Starter Kit
Apple Computer, Inc.
PO Box 4493
Bridgeton MO 63044-9718

# Introducing the on-line service for people who have never tried one. And for people who have.

*Elegant graphic interface makes it easy to navigate and find information.*

*Keep up-to-date with the latest from major news sources.*

*Easily communicate with users of other electronic services, including the Internet.*

*Your direct connection for the most in-depth Apple and third-party information and support anywhere.*

*Be more successful with relevant business, financial, and management insights.*

*Be part of a global community of eWorld users.*

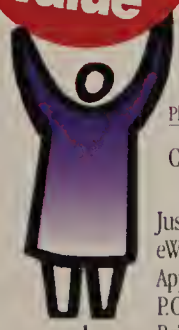
## Enter e•World™ now with this free starter kit.

If you've ever tried another on-line service, you'll notice the difference in eWorld immediately. The brilliant graphics are the kind you'd only expect from Apple. And the familiar interface makes it easy to go wherever you choose and find whatever you need.

eWorld puts you in touch with a global community of Macintosh users and with people on other electronic mail services, including the Internet. It's also the best place to get the most in-depth Apple product and support information. And whether you want to access key business information or conduct on-line meetings from anywhere, eWorld is the right place to be.

There are hundreds of other reasons why you'll want to try eWorld. But rather than tell you about them, we'd like to show you. Just send for your free eWorld starter kit, including software and special registration information so you can sign on immediately.* And get ready to enter a world like no other.

FREE $19.95 value



e•World™

*The right place. The right time.*

I'd like to know more about the exciting, new on-line service from Apple. Please send me the eWorld starter software package — a $19.95 value — free.

Name _____

Company Name _____

Home Address _____ Apt./Suite # _____

City _____

State _____ ZIP _____

Phone ( ) _____

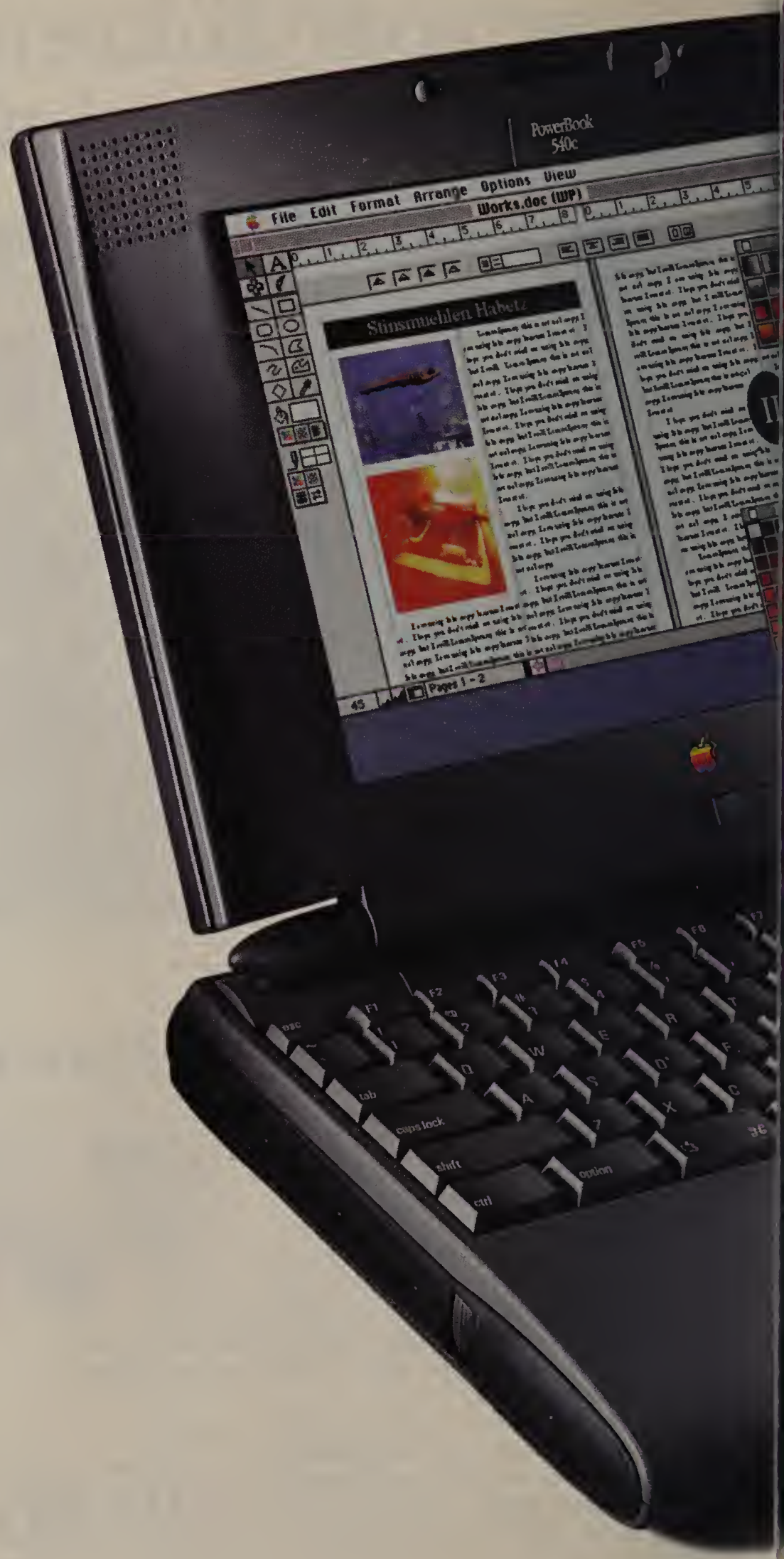
Check one: ☐ 14MB Disk ☐ 800K Disk 23MW894

Just return this coupon to:
eWorld Starter Kit
Apple Computer, Inc.
P.O. Box 4493
Bridgeton, MO 63044-9718

Apple

*© 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. eWorld and the eWorld logo are trademarks of Apple Computer, Inc. The eWorld logo is copyrighted in the name of Apple Computer, Inc. Offer is subject to change without notice. Offer valid only in the USA (50 states and the District of Columbia). Offer expires 10/31/94. Coupon must be postmarked no later than 10/31/94. Apple is not responsible for lost, late, or misdirected mail. Please allow 4–6 weeks for delivery. Offer does not include on-line charges. Offer good while supplies last. *NOTE: To enter eWorld, you'll need the free eWorld software, an Apple Macintosh computer with system software version 7.0 or later and at least 4 megabytes of RAM, a phone line, and a Hayes-compatible modem.*

# The PowerBook 500 Series. In brief.



Apple

# The PowerBook 500 Series. In depth.

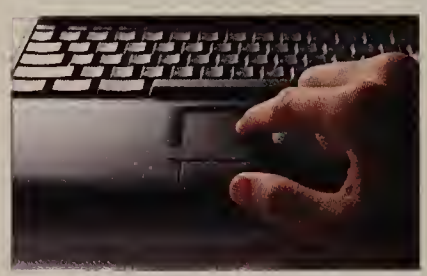
Welcome to the next generation of PowerBook®.

Four new Apple® PowerBook computers that redefine, once again, what a notebook computer can be.

One look tells you these are very new indeed. The flowing shape. The sleek lines. The futuristic curves.

But the new appearance is only your first clue to the dramatic changes, refinements and improvements we've engineered inside.

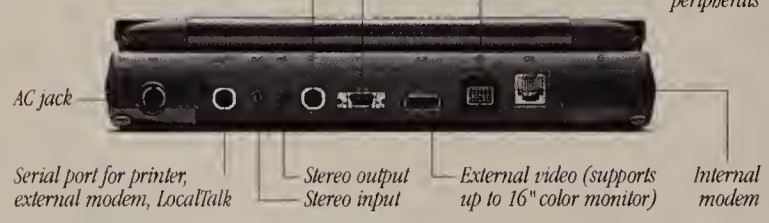
**More power.** The PowerBook 500 series is designed around the Motorola 68LC040 processor—a chip that offers far more power than the chips that powered previous PowerBook models.



*The revolutionary new Apple trackpad makes pointing and clicking even more intuitive than before.*

In benchmark tests, the new PowerBook 540c running at 66/33 MHz was 80% faster than the fastest previous PowerBook. (Its gray-scale counterpart, the 540, is equally fast.) And with the same chip running at 50/25 MHz, the 520 and 520c aren't far behind.

We've supported that processing power with 80% more memory capacity (up to 36MB), 56% more internal storage capacity (up to 320MB) and built-in high-performance Ethernet networking (as well as LocalTalk®).




This makes the PowerBook 500 series powerful enough not only for word-processing long documents or Fortune 500-sized spreadsheets, but also for doing fieldwork with programs like Adobe Photoshop and other high-end, graphics-intensive programs.

Add SoftWindows™ software from Insignia Solutions Inc., and you've got the ability to run MS-DOS programs as well.

The 500 series offers the possibility of even more power later, because you can upgrade to PowerPC™ technology when it's available for PowerBook. (Contrast this with 486 notebooks that aren't upgradable to Pentium technology.)

**More precision.** Kindly direct your attention to the revolutionary new Apple trackpad pointing device that replaces the trackball and is centered on the comfortable palm rest.

The trackpad brings a new level of precision to PowerBook computing.

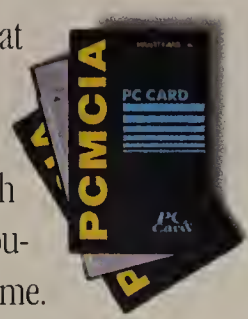
The trackpad's ultrasensitive surface senses the touch of your finger, tracks it across the pad and moves the cursor across the screen accordingly.

This intuitive method of moving the cursor, combined with the new dual-scan and active-matrix screens, gives you much more precise control over the location of the cursor and makes extremely detailed work

© 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, LocalTalk, Macintosh, PowerBook and "The power to be your best" are registered trademarks of Apple Computer, Inc. eWorld, Macintosh PC Exchange and QuickTime are trademarks of Apple Computer, Inc. PowerPC is a trademark of Microsoft Corporation used under license. This ad was created using Macintosh personal computers.

possible (it's actually precise enough for photo retouching) wherever you happen to be.

The PowerBook 540c has what may well be the finest screen ever to grace a notebook computer: an active-matrix, 9.5-inch display capable of showing thousands of colors at the same time. Combined with QuickTime™ video and built-in stereo sound, these screens make for truly spectacular presentations in the most unspectacular locations: on a crowded plane, in a noisy diner, wherever.




*These are the first PowerBook computers to use PCMCIA technology.*

**More expandability.** The new PowerBook 500 series includes a lot of things that aren't standard on ordinary notebook computers.

Things like built-in file sharing and networking. Stereo sound and video-out. Macintosh PC Exchange™ software, eWorld™ and PowerBook File Assistant file-synchronizing software. And we've even included Apple Remote Access software that allows any modem-equipped PowerBook to work with the Macintosh® computer on your desk, and with your network, as if you were sitting in your office. Even during those times when your office happens to be thousands of miles away.

Still, there's a lot of room to grow. These are the first PowerBook computers to come with a built-in Processor Direct Slot (PDS) for third-party expansion modules. And they're also the first ones to offer the optional plug-in PowerBook PCMCIA Expansion Module, so you can use two Type II or one Type III PCMCIA card for even more flexibility.

You can even install an optional 19,200-baud internal modem to send and receive information quickly, and when it becomes available, a third-party cellular interface for convenient wireless access to your office network.

**More battery life.** Even the batteries have been thoughtfully redesigned. The PowerBook 500 series can use two PowerBook Intelligent Batteries. These high-powered NiMH batteries use special processors within each pack to monitor battery power and the new PowerBook Control Strip — power management software that tells you exactly how much time you have before you need to recharge the batteries.

| | PowerBook 520 | PowerBook 520c | PowerBook 540 | PowerBook 540c |
|---|---|---|---|---|
| Processor | *Motorola 68LC040 @50/25 MHz* | | *Motorola 68LC040 @66/33 MHz* | |
| Display | *FSTN Gray-Scale* | *Dual-Scan Color* | *Active-Matrix Gray-Scale* | *Active-Matrix Color* |
| Hard Drive | *160MB* | *160MB* | *240MB* | *320MB* |
| Memory | *4MB DRAM expandable to 36MB* | | | |
| Battery Life | *Up to 7 hours with 2 batteries* | | *Up to 6 hours with 2 batteries* | |
| Audio | *16-bit stereo in and out, built-in stereo speakers and mono microphone* | | | |

The result is 40% more battery life than before — up to seven hours per charge — when using both batteries.

They recharge faster, too — in as little as two hours for both batteries when the PowerBook is asleep or shut down. And the batteries even recharge while you're using the PowerBook.

**More information.** While this has been an abundance of information, by any standard, it can't serve as a substitute for a personal demonstration. Something that can be easily arranged at your authorized Apple reseller. To find the one nearest you, simply call 800-732-3131, ext. 100. (In Canada, call 800-665-2775, ext. 910.)

And soon discover more of the power you buy a PowerBook for. The power to be your best.®

Introducing the PowerBook 500 Series.
*The next generation of PowerBook.*

ernational Business Machines Corporation used under license therefrom Adobe Photoshop is a trademark of Adobe Systems Incorporated and may be registered in certain jurisdictions Windows is a trademark of Microsoft Corporation, and SoftWindows is a

Apple

# Reviews

## Power Macintosh 7100/66

**Macintosh Computer**

**PROS:** Three expansion slots; fast CPU. **CONS:** Awkward video implementation. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S SUGGESTED PRICE:** Base model $2899.

MW ★★★★★

QUADRA, MOVE OVER. THE Power Mac 7100/66 is poised to be the next standard business Macintosh desktop model. The Centris and Quadra 650 have become the business Macs of choice because they combine power and expandability—and the Power Mac 7100, which looks like a Quadra 650, should assume the same role. Based on my experiences with early native-PowerPC software, I expect the ultimate performance of the 66MHz 7100—with all native programs—to be about two to three times that of a Quadra 650 (see "Native Power Mac Software Performance").

MARK JOHANN/SCREEN IMAGE-IMAGE BANK

### Ever-Changing Performance

The Power Mac 7100, running 680X0 programs in emulation, is about as fast as a IIfx, according to Macworld Lab tests. Our standard tests use programs that were available only in 680X0 versions at test time. Aldus FreeHand and PageMaker and Specular International Infini-D later shipped in native mode; QuarkXPress is expected by July. The three other programs in our test suite are on the slow track to native versions: Microsoft Excel and Word (slated for August releases) and Claris FileMaker Pro (no firm date).

As the applications you use begin to ship in native versions, you'll see some of the promised two-to-four-times-a-Quadra-650 speeds. Till then, the chief advantage of a Power Mac is bragging rights. Still, the reasons to delay buying a Power Mac are beginning to evaporate.

### Weird Video

The Power Macs are the first Apple computers with two video ports built in. One, on the back panel, uses an AV-style connector and the system RAM to carry the video signal (like the IIci). The other is on the bundled PDS-based video card (on an AV Power Mac, there's an AV card in the PDS slot that also offers a video port). The PDS video card uses a standard Mac video connector and video RAM (VRAM) to carry the video signal.

Is there an advantage to using one video port over the other? Sometimes. The performance of the back-panel video connector and the PDS card are about the same—about equal to a Quadra 700's internal video, but the PDS card's video supports larger monitors at higher resolutions: up to 16-bit on a 19-inch monitor and up to 24-bit on a 16-inch monitor, if you have 2MB of VRAM on the card. (For PDS cards with 1MB of VRAM, or for AV cards with the TV-video ports in use, the Power Mac 7100 supports 8-bit color on a 19-inch monitor, 16-bit color on a 16-inch monitor, and 24-bit color on a 14-inch monitor.) The back-panel video is limited to 8-bit color on 16-inch monitors and 16-bit color on 14-inch monitors.

The speed of the Power Mac's video, while less than that of a Centris or Quadra 650, is fine for most users. Apple has clearly decided that fast video should be an integral part of a system and not an add-on. If you need very fast video, you'll want to get a NuBus-based video accelerator anyhow. (And then you can connect three monitors to your Power Mac!)

It's convenient to have two monitor connectors, but Apple's implementation is strange. Most people don't have AV monitors, so they must plug their monitors into the PDS card or buy an adapter cable to use the back-panel port. And for the AV cards, why not use an AV video connector instead of the standard video connector? (From an engineering standpoint, it was easier to put the AV connector in the back; the motherboard there includes circuits for ADB and sound, whose control chips are nearby.)

Apple also says the Power Macs support VGA and Super VGA multimode monitors—the PC standards—via the PDS card video. That's true only with the right video adapter. Note that a Mac-to-VGA adapter for a Centris or Quadra may not work as you'd expect on a Power Mac. The Power Macs now support multiresolution displays (including Apple's latest models), so you can change the pixel resolution from, say, 832 by 624 to 1024 by 768 to view a large image—without restarting. VGA monitors have done that for years, although a restart is required. But the Power Mac won't know that a VGA monitor is multiresolution unless the adapter tells the Power Mac so. Ask your monitor maker for a new adapter; companies like NEC Technologies offer them for free (312/622-7427).

Both of my video concerns are minor issues—neither affects the vast majority of users, and neither lacks a solution for the users who are affected.

With Apple's new strategy of developing Mac platforms that several models can be based on—the Centris 650, Quadra 650, Quadra 800, and Quadra 840AV all have the same basic motherboard design, while the IIvx, Centris 650, Quadra 650, and Power Mac 7100 all have the same case—it's not surprising that the 7100 looks like its 040-based counterparts. There's not much to say about its hardware—the 7100 has the standard devices and ports.

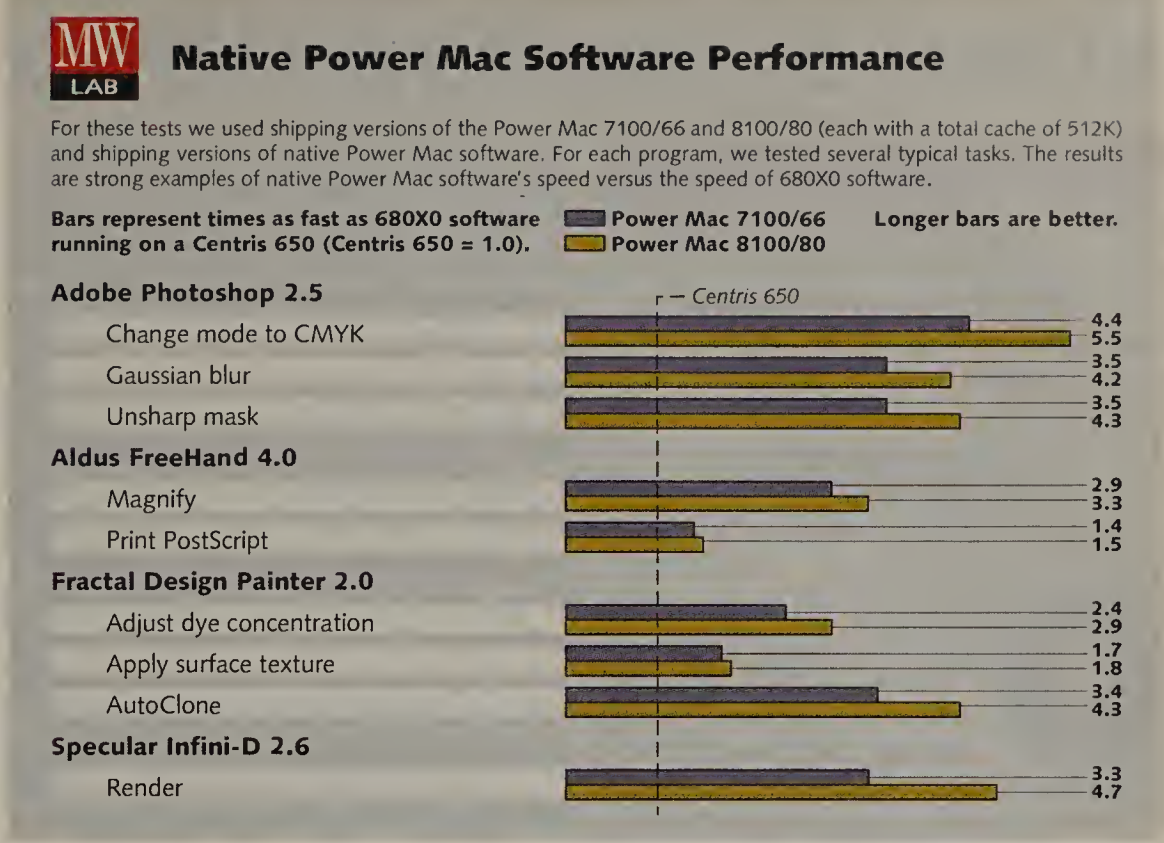
Apple did make built-in Ethernet connectors (for which you need a transceiver) standard for all Power Macs, and 8MB of RAM is now a standard on-board configuration. You'll probably need that RAM, since early indications are that Power Mac software uses more RAM than 680X0 software. Power Mac software also typically takes more disk space, so make sure you get a big hard drive—consider 250MB a minimum, with 500MB a more realistic amount.

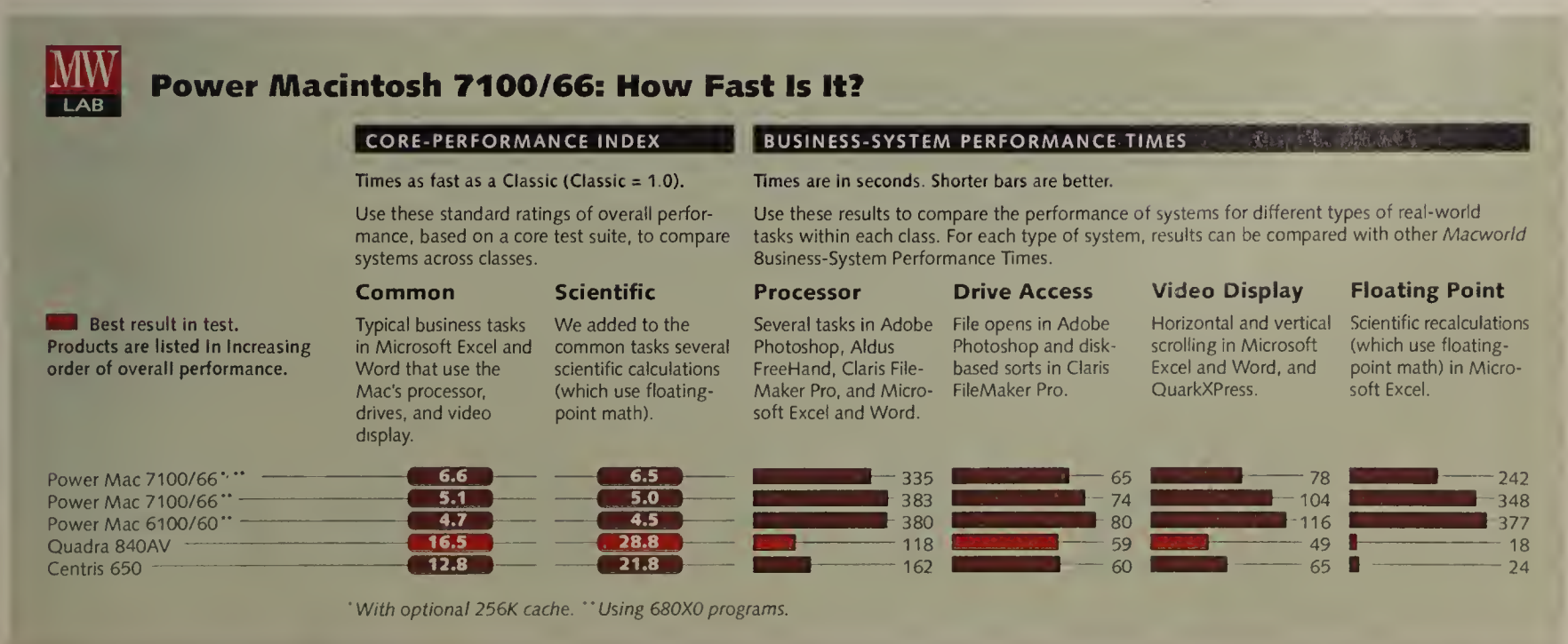
The 7100 has one option you should strongly consider adding: a cache card. This boosts performance by about 15 percent for standard programs and by as much as 45 percent for programs that use a lot of floating-point math, such as modeling and scientific-analysis software.

The use of the PDS for the video or AV card also means this slot cannot be used for expansion devices, except for third-party video cards (which no one has yet indicated interest in developing).

### A Great Mac

The Power Mac 7100/66 is the Mac I'd like to have—once the native software I use is available, of course. If you have the money—figure $4000 for a model with a 500MB drive, 256K cache card, 16MB of RAM, keyboard, and monitor, but no CD-ROM drive—the 7100 makes an outstanding workstation whose power should last you for several years, even with the inevitably faster Macs based on faster PowerPC 601 and PowerPC 604 CPUs that are likely to ship next year. A $4000 price is nothing to take lightly, but the Power Mac 7100 delivers every dollar's worth.—GALEN GRUMAN



# Power Macintosh 8100/80

**Macintosh Computer**

**PROS:** Fast 80MHz CPU; tower case with three expansion slots and room for two 1GB hard drives. **CONS:** Expensive compared with other Power Macs. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S SUGGESTED PRICE:** $4249.

MW ★★★★

RUNNING AT 80MHZ, twice the clock speed of machines using Apple's 68040 CPUs, the Power Mac 8100 is ideal for publishers and designers who must squeeze every drop of performance from their computers. But of course there's a hitch: to get that speed, you need applications written in code native to the PowerPC chip.

The 8100 runs 680X0 applications at the speed you might expect from a Quadra 610, according to Macworld Lab tests. So if you now use a fast Quadra, you might want to wait until the software you need is in a stable native version (see "Native Power Mac Software Performance" in the Power Mac 7100 review).

Recognizing that LocalTalk is too slow for professional users and that many Macs must coexist with DOS machines, Apple has made Ethernet standard on all Power Macs and has bundled Macintosh PC Exchange with the Power Mac version of System 7.

Like all Power Macs, the 8100 can support two monitors simultaneously. The first option, an AV-style monitor port on the Power Mac's back panel, uses DRAM to give you 8-bit color on 16-inch monitors and 16-bit color on 14-inch displays. The second option is a PDS-based video card that uses VRAM installed directly on the card. The 8100 offers 2MB of VRAM in standard configurations, and it supports 16-bit color on 21-inch displays and 24-bit on 14-inch and 16-inch displays. If you upgrade the VRAM to 4MB (about $200), you'll get 24-bit color on monitors with up to 21-inch displays.

The 8100 also supports multiresolution displays, but only if they identify themselves to the Power Mac as multiresolution models. You may need a video cable adapter for a third-party monitor.

### The 8100/80AV

The AV option lets users add video input and output. The AV card replaces the standard video card in the 8100's PDS slot and adds three ports: one for a second monitor and two for S-Video.

MARK JOHANN/SCREEN IMAGE-TONY STONE IMAGES

While the 8100's speed does improve AV performance, there still isn't much new AV technology available for Power Macs. Until AV software catches up with PowerPC technology, the AV Power Macs don't live up to Apple's promised telephony and voice-recognition features.

### Expanding the 8100

Most users will add more options to the powerful base design. Users of QuickTime or 3-D rendering applications, for example, need lots of storage space. In addition to the 3½-inch, third-height hard drive and 3½-inch floppy drive included with the base model, the tower case has room for another full-height 3½-inch drive (or two half-height drives) and a 5¼-inch removable-media bay for a CD-ROM player or SyQuest drive. To access the extra drives quickly, the 8100 features a dual-channel SCSI interface; the internal SCSI channel supports data transfers at up to 10 Mbps, and the external channel supports up to six other SCSI devices that don't require such high-speed transfers. The high-speed channel even supports an internal disk array.

The 8100 is fast and will only get faster as software goes native and developers take better advantage of the PowerPC chip's power. And if you want to add multimedia, the 8100 offers top-of-the-line speed and expandability. But this Power Mac is expensive when compared with its DOS equivalents, or even with the Power Macintosh 7100: the more than $1000 price difference buys you essentially an extra 20MHz of speed, a dual SCSI port, and a tower case.

While it doesn't quite offer the excellent price/performance ratio of the other two Power Macs, you should consider the 8100 if you're a high-end user moving your work over to RISC-based computing.—MATTHEW HAWN AND DANNY LEE

## Power Macintosh 8100/80: How Fast Is It?

**CORE-PERFORMANCE INDEX**

Times as fast as a Classic (Classic = 1.0).

Use these standard ratings of overall performance, based on a core test suite, to compare systems across classes.

**BUSINESS-SYSTEM PERFORMANCE TIMES**

Times are in seconds. Shorter bars are better.

Use these results to compare the performance of systems for different types of real-world tasks within each class. For each type of system, results can be compared with other *Macworld* Business-System Performance Times.

Best result in test. Products are listed in increasing order of overall performance.

| | Common | Scientific | Processor | Drive Access | Video Display | Floating Point |
|---|---|---|---|---|---|---|
| | Typical business tasks in Microsoft Excel and Word that use the Mac's processor, drives, and video display. | We added to the common tasks several scientific calculations (which use floating-point math). | Several tasks in Adobe Photoshop, Aldus FreeHand, Claris FileMaker Pro, and Microsoft Excel and Word. | File opens in Adobe Photoshop and disk-based sorts in Claris FileMaker Pro. | Horizontal and vertical scrolling in Microsoft Excel and Word, and QuarkXPress. | Scientific recalculations (which use floating-point math) in Microsoft Excel. |
| Power Mac 8100/80* | 8.1 | 8.0 | 256 | 57 | 66 | 187 |
| Power Mac 6100/60* | 4.7 | 4.5 | 380 | 80 | 116 | 377 |
| Quadra 840AV | 16.5 | 28.8 | 118 | 59 | 49 | 18 |
| Centris 650 | 12.8 | 21.8 | 162 | 60 | 65 | 24 |

*Using 680X0 programs.

# Newton MessagePad 110

**Personal Digital Assistant**

**PROS:** Better handwriting recognition and more RAM than original MessagePad; improved battery life; improved case design. **CONS:** Handwriting software still frustrating; lack of business software. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S SUGGESTED PRICE:** $599; ROM upgrade for original MessagePad $99.

MW ★★★

LET'S GET THIS STRAIGHT AT THE start: the Newton MessagePad 110 is not radically different from the original Newton MessagePad. Don't expect it to recognize all your handwritten notes all the time. Don't ditch your PowerBook in favor of a much smaller PDA just yet. The Newton MessagePad, like PDAs in general, still lacks that one killer application that will make people realize they really do need a Newton.

With the Newton MessagePad 110, Apple provides more-versatile handwriting recognition, more memory, longer battery life, more-efficient design. When software developers and the market in general catch up, Newton technology will offer a stable platform.

### Safer to Carry, Delightful to Hold

The MessagePad 110 has a sleeker design than the original MessagePad. The 110 also has a cover that protects the screen when you're not using the Newton. This is a good addition, as any product designed to go everywhere I go better have as much protection as possible. The 110 is a little longer and thinner than the first MessagePad, making it more comfortable to hold in one hand while writing with the other hand. The new stylus is rounder and heavier than the original, which makes it feel more like a pen. It has a telescope-like design that allows it to collapse so it's out of sight after you return it to its home in the upper-right-hand corner of the MessagePad.

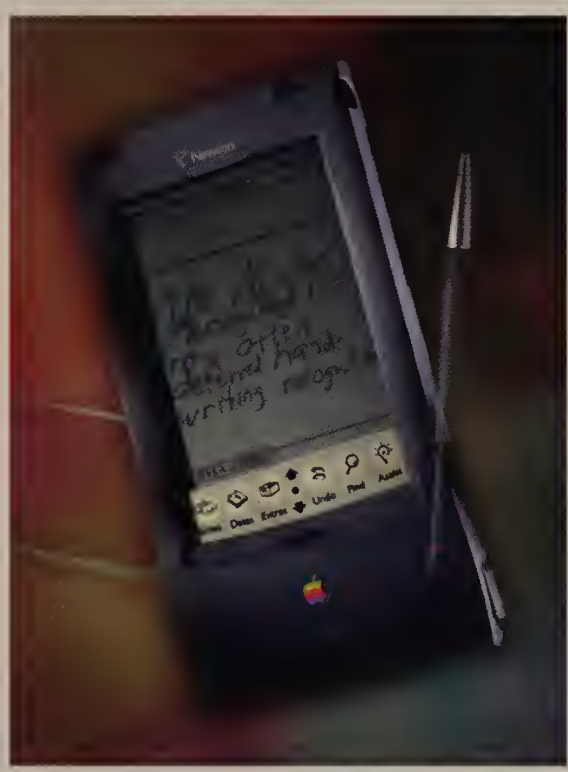
### The Recognition Factor

The most significant feature of the MessagePad 110 is its improved handwriting recognition. No, it still isn't 100 percent accurate, but heck, I'm not even 100 percent accurate at recognizing my handwriting. The new ROM-based handwriting-recognition software now supports deferred handwriting recognition and letter-by-letter recognition.

With the original MessagePad, if you don't have handwriting recognition turned on, your notes are saved as digital ink and are destined to remain digital ink until they are deleted; you can't go back and convert the notes into ASCII text. With the 110, you simply select the digital ink you want to recognize (by holding down the pen and dragging across the text). Then, when you double-tap on the highlighted text, the MessagePad attempts to recognize your handwriting.

If you use your MessagePad to take notes during meetings, you'll appreciate deferred handwriting recognition—it can be distracting to watch the MessagePad try to recognize your handwriting as you concentrate on what you're writing.

The other major improvement to the 110's handwriting-recognition capabilities is letter-by-letter recognition. In the original MessagePad, recognition is



TOM GIBSON

strictly word-based. That is, the MessagePad attempts to recognize words by matching them to entries in your word list. While this method is fast and generally reliable, the addition of letter-by-letter recognition is great for proper nouns that most likely are not in the word list. If the MessagePad 110 butchers a word, tapping on that word brings up a list of possible alternatives and offers you the option of letter-by-letter recognition. If you write legibly, letter-by-letter recognition works well. For example, the 110 recognized *Macworld* as *MacLeod;* however, when I switched to letter-by-letter recognition, the 110 got it right. Or if you know that you are about to write a series of names that aren't in the word list, you can turn on letter-by-letter recognition. Also, after you use letter-by-letter recognition to identify a word, you can add it to the word list.

If you own the original MessagePad, you can get the improved handwriting-recognition capabilities by upgrading to the new ROM ($99). In addition to the 110, Apple sells the MessagePad 100 ($499), which uses the same case design as the original. The 100 has the same ROM as the 110, so you get the improved handwriting-recognition features.

In addition to new ROMs, the 110 has 1MB of RAM, which is a big plus because the Newton uses its RAM for active memory as well as storage. Of the original MessagePad's 640K of RAM (the MessagePad 100 also will have only 640K), only about 140K is available as work space. The 110 offers about 520K for work space, which reduces the need to buy a RAM expansion PCMCIA card.

The MessagePad 110 also has longer battery life, thanks to four AA alkaline batteries or a rechargeable NiCad battery. During my use I never received a low-battery message.

### Make the Connection

Apple has also released version 2.0 of Newton Connection Kit ($99). This new version has filters for WordPerfect 3.0, Word 4.0 and 5.0, ACT 1.1, Dynodex, Address Book Plus, DateBook Pro, Now Up-to-Date, and others. If you can't picture yourself entering and reentering hundreds of names, addresses, phone numbers, and calendar events using the Newton's handwriting recognition, you'll appreciate the connection kit.

The MessagePad 110's beaming capabilities provide an easy way to exchange data with other MessagePads and infrared devices. And the 110's infrared transceiver now supports transmission speeds of up to 38.4 Kbps. It's true that you don't see a lot of people running around beaming stuff to Newton MessagePads nowadays. However, if Apple decides to add infrared transceivers to Macs and printers, the MessagePad's faster infrared-transmission capability will become much more relevant.

### Has the Newton Come of Age?

The MessagePad 110 is the Newton that Apple should have shipped last August, so in many ways it simply brings Newton technology to where you'd expect it to be. Still, Apple deserves praise for recognizing the Newton's shortcomings and acting quickly to correct them. Using the MessagePad 110 was a pleasant experience. Now all I need is a reason to use it.

—DAN MUSE

# OrangePC Model 200 Series

**PC Coprocessor Cards**

**PROS:** Fast; works in most Power Macs and 680X0 Macs; can be networked; allows expansion. **CONS:** Expensive; not as fast as CPUs' rated speeds. **COMPANY:** Orange Micro (714/779-2772). **COMPANY'S SUGGESTED PRICE:** $1139 to $3237, depending on model and configuration.

MW ★★★★

WHAT'S THE BEST WAY to run Windows from your Macintosh (assuming you are so inclined)? Today, you have several choices, including Farallon Computing's Timbuktu Pro for controlling a PC remotely (see *Reviews*, May 1994), Apple-endorsed SoftWindows from Insignia Solutions (see the review in this issue), and Orange Micro's OrangePC cards.

The new Model 200 series revamps the Orange Micro line so that all the cards use one of the 80486 CPUs that are the backbone of business PCs today.

There are three basic cards in the OrangePC lineup: the Model 210, which comes with 4MB of RAM, a serial port, a parallel port, and standard VGA video (16-color, 640-by-480-pixel resolution); the Model 250, which comes with 8MB of RAM, a PCMCIA slot, and Super VGA video (256 colors at up to 800-by-600-pixel resolution); and the Model 290, which is essentially a Model 250 with 16MB of RAM and a cable that adds a serial and parallel port.

The PCMCIA slot lets you insert drives, SCSI adapters, and network cards, while the serial and parallel ports enable you to connect to fax modems, input devices, and printers.

All three models work in any Mac that can take 12-inch NuBus cards: that's all Macs except the IIsi, Centris 610, Quadra 605 and 610, Centris and Quadra 660AV, and Power Mac 6100. The OrangePC software works on the Power Mac 7100 and 8100 and on 680X0 Macs.

The OrangePC software lets you share volumes (folders or disks) between the PC and the Mac. If you use Apple's Macintosh PC Exchange 2.0, you can even share a PC SCSI disk that is connected to your Mac's SCSI port, although disk access slows considerably. If you want speedy disk access to an external drive, get a PCMCIA-based drive or SCSI adapter.

With the OrangePC, you can give your Mac a faster CPU for Windows work, so it's easy to put together the performance and features you want.

But the combination of expansion and speed is expensive. OrangePCs cost from $1139 for the lowest-end Model 210 (which uses a 33MHz 486SX) to $3237 for the highest-end Model 290 (which uses a 100MHz IntelDX4). That's about 30 percent more than it costs to buy an equivalent Windows PC—monitor, keyboard, drive, the whole works.

You might attempt to justify the cost based on the fast speed of the 486 CPUs that the OrangePC cards use. But the speed you get does not match the rated speed of the CPU. For example, an OrangePC card using a 33MHz 486SX performs more like a PC using a 25MHz 486SX, while an OrangePC card using a 66MHz 486DX2 performs more like a PC using a 33MHz 486DX. The slowdown is due to the overhead of managing the PC card.

Still, the OrangePC cards are faster than any other Windows Mac option, as shown in Macworld Lab tests. If your goal is to get a Macintosh that runs Windows as fast as a PC, you can't get there from here. If your goal is to get business-level performance for day-in, day-out use, you can.

And although the price for the processor cards is steep, it's not out of line. In fact, if you compare the total cost of a Power Macintosh 7100/66 with a 33MHz 486SX-based OrangePC Model 210 card and Windows (it's not included with the card) against that of a Power Mac 7100/66 with SoftWindows and the extra RAM and cache, it's a difference of only $375. That's not much, considering the much better performance of the Model 210. But for faster OrangePC cards, the price difference starts to loom large, and you have to ask yourself whether you're buying too much power.

—GALEN GRUMAN

MW LAB

## Orange Micro Comparison

Best result in test.
Products are listed in decreasing order of overall performance.

| | CORE-PERFORMANCE INDEX | | WINDOWS-PERFORMANCE INDEX | | | | |
|---|---|---|---|---|---|---|---|
| | Times as fast as a Classic (Classic = 1.0). | | Times as fast as a 33MHz 486DX PC (486DX = 1.0). | | | | |
| | **Common** Typical tasks that use the processor, drives, and video display. | **Scientific** We added to the common tasks several scientific calculations. | **Aldus Info Publisher 2.0** Database queries and data sorts. | **Lotus Ami Pro 3.01** Find and replace, layout reformat, and file-format conversion. | **Lotus 1-2-3 4.01** Integer and floating-point calculations, file opens, and scrolls. | **Microsoft Access 1.1** Report generation, file-format translation, and data sort. | **Overall** Combination of Windows-Performance Indexes. |
| 66MHz 486DX2 (Gateway 2000 4DX2-66V) | 23.0 | 62.1 | 1.5 | 1.7 | 1.4 | 1.3 | 1.5 |
| OrangePC Model 290 (100MHz IntelDX4)[A] | 27.4 | 79.0 | 1.5 | 1.8 | 0.9 | 1.5 | 1.4 |
| 33MHz 486DX (AMI 486/33) | 15.5 | 36.3 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| OrangePC Model 290 (66MHz 486DX2)[A] | 19.6 | 55.7 | 1.0 | 0.6 | 0.8 | 1.0 | 0.9 |
| 33MHz 486SX (Tandy 3100 Model 10) | 16.0 | 16.6 | 1.0 | 0.9 | 0.3 | 0.9 | 0.8 |
| OrangePC Model 210 (33MHz 486SX)[A] | 12.9 | 14.1 | 0.8 | 0.8 | 0.2 | 0.6 | 0.6 |
| 25MHz 486SX (Tandy 3100 Model 10) | 12.1 | 12.6 | 0.9 | 0.6 | 0.2 | 0.6 | 0.6 |
| Timbuktu Pro 1.1 (33MHz 486DX)[B] | 11.0 | 31.1 | 0.7 | 0.5 | 0.3 | 0.7 | 0.6 |
| Apple DOS Compatible Card (25MHz 486SX)[C] | 11.9 | 12.7 | 0.6 | 0.7 | 0.2 | 0.6 | 0.5 |
| SoftWindows 1.0 (Power Mac 8100/80) | 8.6 | 14.4 | 0.5 | 0.6 | 0.4 | 0.4 | 0.5 |
| SoftWindows 1.0 (Power Mac 7100/66[D]) | 7.8 | 13.0 | 0.3 | 0.5 | 0.3 | 0.3 | 0.3 |
| SoftWindows 1.0 (Power Mac 7100/66) | 6.5 | 10.0 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 |
| SoftWindows 1.0 (Power Mac 6100/60[D]) | 5.9 | 10.6 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| SoftWindows 1.0 (Power Mac 6100/60) | 5.0 | 7.4 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 |
| SoftPC 3.1 (Centris 650) | 1.6 | 2.8 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |

[A] *On a Centris 650.* [B] *From a Centris 610 over a LocalTalk network.* [C] *4-bit color, with 8MB of system RAM.* [D] *With 256K cache.*
All systems used 8-bit color with 16MB of system RAM, unless otherwise noted.

# SoftWindows 1.0

**Windows Emulation**

**PROS:** Faithful emulation of Windows 3.1.
**CONS:** Requires significant RAM; sluggish; does not support several Windows programs.
**COMPANY:** Insignia Solutions (415/694-7600).
**LIST PRICE:** $499.

MW ★★

INSIGNIA HAS A TOUGH CHALLENGE: to deliver Windows on a Mac completely via software. The Power Macs are here, and so is SoftWindows—with a strong endorsement by Apple. Does SoftWindows solve the speed problem? No, although performance is now acceptable for low-end business needs. More important, is SoftWindows a long-term solution to Windows compatibility? Perhaps, but there's no guarantee that it can keep up with forthcoming releases of Windows or new Microsoft technology.

SoftWindows delivers its main promise: you can run Windows programs, on a Mac, in a Windows window. Insignia has a license from Microsoft to use the Windows 3.1 code, and sure enough, you get real Windows. But there are prices to pay for the ability to run Windows via emulation.

One price is the performance. While SoftWindows runs at four to six times the speed of Insignia's SoftPC, that's still at the level of bottom-end Windows machines, ranging from a fast (33MHz) 80386DX (approximately equivalent to the performance of a Mac IIfx) to a slow (25MHz) 80486 (approximately equivalent to a Centris 610). SoftWindows' performance varies by application. This performance is fine for standard programs used occasionally, such as accounting packages and databases.

A second price is compatibility. Yes, SoftWindows contains real Windows code, but it runs only in Standard mode. That means it acts like it's working on an 80286-based PC (such as IBM's long-discontinued AT). The 286 has been dead for several years, and even the 386 has been basically out of the business picture for more than a year. Now that Pentiums are starting to overtake the 486, Windows software developers are dropping support for the 286 and requiring a 386 or better CPU. By targetting users who have 386, 486, or Pentium PCs, software developers can take advantage of Windows' Enhanced mode and its better memory-handling, multiple-program-interaction, and protected-services features.

But Enhanced-mode programs won't work under SoftWindows. System-level services like OLE 2.0 (the Windows equivalent of the forthcoming OpenDoc, or Apple's publish and subscribe) require Enhanced mode—even if you don't need to run OLE 2.0 within your SoftWindows session, you may well want to use OLE to connect a program running in SoftWindows with a program running on a real PC on the network.

Realizing this, Insignia is working on an Enhanced-mode–compatible upgrade to SoftWindows, but that won't be available until the end of the year, at which time the next version of Windows—version 4.0, code-named Chicago—should be close to shipping. People need 486 mode right now, not the end of the year. Insignia says it will be several months after 4.0's release before SoftWindows will be upgraded to support it.

A third price is cost. The $499 list price translates to a street price of about $350. While that's steep for an operating system (Windows 3.1, MS-DOS, and System 7 combined cost less), it's not unreasonable. But SoftWindows requires 16MB of RAM—that's another $350 or $400 for most Power Mac owners. (Why so much RAM? The Mac System takes about 3MB, while SoftWindows' emulation takes about 7MB. That reserves about 5MB for Windows itself and about 1MB for other Mac programs.) And for reasonable performance, you need a cache card in the Power Mac 6100 or 7100—that's another $200 from third-party cache vendors. Quickly, SoftWindows ends up costing you about $900. For a few hundred dollars more, you can buy a PC coprocessor board from Orange Micro (714/779-2772).

SoftWindows supports NetWare, so a Mac running it can be directly connected to a PC network. SoftWindows also runs on all models of the Power Macintosh. (The Orange Micro boards require a Mac or Power Mac with a 12-inch NuBus slot.) Users who won't be performing demanding tasks can run it—at less-than-optimal performance—on a system without a cache, which drops the total cost to about $700.

If you run Windows software occasionally, or run undemanding Windows software a lot—and the Enhanced mode support is not an issue for you—SoftWindows is a viable solution, but no more than that. For more-demanding or long-term needs, however, a hardware solution is a better approach. As Power Macs get faster, so should SoftWindows, but nonetheless, I'm not sold on SoftWindows as a long-term solution to Windows compatibility.—GALEN GRUMAN

## Power Mac Update

### WordPerfect 3.0a

**System Requirements** 680X0 Mac: 2MB of RAM, System 6.0.7, 9MB of hard drive space. Power Mac: 4.5MB of RAM, System 7.1.2, 11MB of hard drive space.
**Pricing** The company's suggested price is $495; current users of WordPerfect 3.0 for Macintosh can upgrade to the Power Macintosh version for $19.95 (basically the cost of the disks), users of WordPerfect 2.X or earlier can upgrade for $89, and users of competing word processors can migrate to WordPerfect 3.0a for $99.
**Company** WordPerfect Corporation (801/222-5000).

WordPerfect Corporation has wasted no time in shipping the native Power Macintosh version of WordPerfect 3.0. WordPerfect 3.0a has been recompiled to take full advantage of the Power Macintosh features. Both the 680X0 and Power Macintosh versions contain the same feature set and ship on the same set of disks. WordPerfect uses the smart installer, which automatically detects whether a user has a 680X0 or Power Macintosh and installs the appropriate version.

Macworld Lab performed a variety of speed tests using a WordPerfect 508K real-world file. We tested how long it took to open the file; perform a page scroll, find and replace, and word count; and change the font in the entire document. We then averaged the results. Macworld Lab performed these tests on a Power Macintosh 7100/66 with 8MB of RAM and a 250MB hard drive, and for comparison we performed the same tests on a Centris 650 with 8MB of RAM and a 230MB hard drive.

MW LAB

| | WORDPERFECT 3.0a | WORDPERFECT 3.0 |
|---|---|---|
| **Power Mac 7100/66** | | |
| Native | 37.75 | |
| Emulated 680X0 | | 100.84 |
| **Centris 650** | | |
| 680X0 | | 60.88 |

*Average time to perform tests (in seconds).*

The Centris 650 outperformed the Power Macintosh 7100/66 using the 680X0 version of WordPerfect. When running software written for 680X0 CPUs, the Power Macs performed at speeds between those of a IIci and a Centris 650, according to our testing. Clearly, no one should buy a Power Mac to run emulated 680X0 software.—LAUREN BLACK

# THIS NEW WIRELESS NETWORK WILL HAVE YOU BOUNCING OFF THE WALLS INSTANTLY AND EFFORTLESSLY.

Plug and play takes on new meaning with the Photonics COOPERATIVE™ Transceiver.

Using the latest in wireless infrared technology, it lets you create a portable network. So you can instantly access all your network resources — share files, synchronize calendars, print documents, send e-mail, whatever — without the hassles of hard-wiring. You can even use our access unit to bridge to an existing Ethernet network.

COOPERATIVE uses diffuse infrared signals that bounce off walls, ceilings, furniture, and floors to instantly "connect" Macs,® PowerBooks,® Newtons,® and peripherals like Hewlett-Packard® DeskJet,® and Apple LaserWriter® printers.

There's no problem with signal blockage. No need to "aim." It's totally secure. Incredibly power-efficient. And it's so safe, there are no FCC or global restrictions on its use.

COOPERATIVE is transparent to AppleTalk® and LocalTalk® so there's no software to install or figure out. You can set up anytime, anywhere. It's ideal for mobile users, for use in conferences, classrooms and shared offices, or for creating temporary networks — even on airplanes. And you can easily access wired LocalTalk and Ethernet networks.

*(actual size)*

Call Photonics at 1-800-628-3033 today for your free wireless networking white paper and find out how COOPERATIVE can get you connected instantly and effortlessly.

**PHOTONICS™**

*Instant Wireless Networking*

©1994 Photonics Corporation. 2940 North First Street, San Jose, CA 95134. COOPERATIVE and the Photonics logo are trademarks of Photonics Corporation. Other brand and product names are trademarks of their respective holders.

**Circle 298 on reader service card**

# MetaFlo'

**Graphics Utility**

**PROS:** Easy to use; versatile; creates interesting visual effects and animations. **CONS:** Lacks Undo in morphing mode; no automatic save of catalog images. **COMPANY:** The VALIS Group (415/435-5404). **LIST PRICE:** $595.

MW ★★★★

REMEMBER CREATING FUNNY faces by pressing images onto Silly Putty and tugging on it? That's basically the premise of MetaFlo', a graphics utility that yields interesting visual effects with a minimum of fuss.

MetaFlo' imparts elasticity to 2-D images, letting you push and pull collections of pixels while retaining the visual integrity of the image. For example, you can edit photographs to produce subtle changes, such as widening a smile or thinning the nose on a face. Or you can simply distort the subject matter, as you might to emulate the melting timepieces of Salvador Dalí. When you're done, MetaFlo' renders a new image. And it can save the progression of image changes as a QuickTime movie, making special-effects animation a snap.

MetaFlo' can juggle several image layers simultaneously to produce complex effects. It accepts both PICT and TIFF files. You can operate tools for scaling, rotating, skewing, distorting, and translating (moving) on the entire image or on user-defined segments. You produce localized distortions by defining a core segment and a surrounding boundary that softens the transition from distorted segments to unaffected areas. And any effect can be modified by a percentage. For example, you can reduce that newly applied smile by 20 percent or further expand a nose by 200 percent.

The program's accuracy and flow controls let you fine-tune the interaction of core and boundary pixels. You can adjust the coarseness of core and boundary edges by changing the number of control points in the elasticity-imparting grid used to calculate distortion effects. Higher settings offer more precision but require more calculation time. Still, after all the adjustments, the magic lies in how well MetaFlo' blends the distorted core and boundary with the rest of the image.

When applying multiple transformations, MetaFlo' keeps track of the sequence in hierarchical fashion. Handy palette buttons permit unlimited undoing and redoing of effects, letting you move forward or backward through the hierarchy. For example, you could retreat several steps, alter a distortion's percentage, and reapply the subsequent distortions to produce a different result. Transformation sequences are also stored in the program's native file format, so you can produce variations from completed images or apply the same distortions on a substitute image.

MetaFlo' keeps track of the hierarchy of transformations by letting you put snapshots of the current state of the image into a catalog. The catalog displays thumbnails in a separate window. Catalogs store the hierarchy of distortions, the order of image layers, the weight of each layer's mask, and the distortion percentage. You can jump to any stored snapshot by simply double-clicking on the thumbnail. Unfortunately, you cannot automatically add images to the catalog. If you need a snapshot after each effect, you must conscientiously take each one.

The program's layering ability lets MetaFlo' produce complex visual effects.

**Distortion on Command** With a bit of practice, MetaFlo' makes subtle photo-editing and large-scale image distortions as easy as click-and-drag.

You can distort layers individually and modulate other properties such as transparency. Each layer can accept a 32-bit image, and MetaFlo' has a pop-up tool palette for producing masking effects.

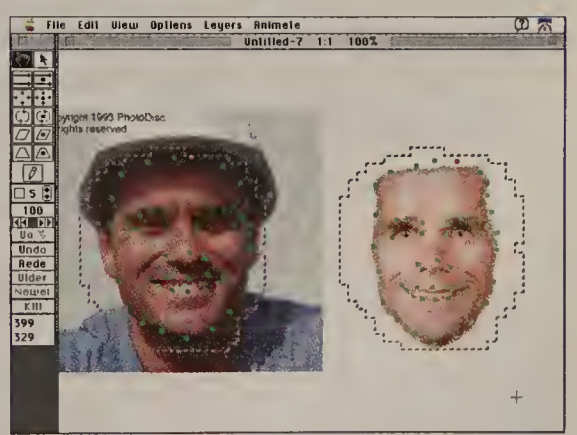
In addition, layering gives MetaFlo' the ability to create two kinds of morphs. The first combines two images by partially distorting each into the other. The result is a blending effect, like a facial composite. The second simply uses one image as a template that governs the distortion of the other. Both produce interesting and useful morphs, but there's no Undo in either morphing mode. If you make a mistake setting control points, you must start over.

To create animations, you define the distortion steps as keyframes, and MetaFlo' generates the intervening frames. You can set transition smoothness between keyframes as a percentage value, and there's no limit to the number of keyframes and tween frames you can specify. You can define the sequence from the catalog without reapplying the effects step-by-step. MetaFlo' stamps keyframes with SMPTE time-codes and offers a convenient Show KeyFrames feature that simplifies organizing an animation.

When you're finished distorting and transforming, MetaFlo' renders final images that are equal in quality to the original. Sliders let you adjust the sharpness of the image and its alpha-channel mask. Stills can be saved as PICT and TIFF files, and animations, in PICS and QuickTime formats. In prepress environments, an image's CMYK channels can be distorted as individual layers. MetaFlo' uses the values of the input image, preserving color balance.

Beyond the program's obvious uses in image processing, animation, and graphic arts lie other less conspicuous applications, such as cosmetic-surgery visualization. MetaFlo's layering capabilities and interface enhancements make it useful and versatile for professional use.

—CARLOS DOMINGO MARTINEZ



**Blended Morphs** MetaFlo' produces morphs by combining image layers. The process can be animated as a QuickTime movie.

# PowerShare Collaboration Servers

**Collaboration Software**

**PROS:** Provides some useful collaborative services. **CONS:** Expensive; weak documentation; confusing and incomplete administration interface; poor troubleshooting aids.
**COMPANY:** Apple Computer (408/996-1010).
**COMPANY'S SUGGESTED PRICE:** $999.

MW ★

THE LATEST BUZZWORD IN OFFICE automation is "collaborative computing"—using computers to let people work together from physically remote sites. Proponents of collaborative computing promise to eventually deliver such tools as desktop videoconferencing, electronic whiteboards, real-time document sharing, and virtual meetings. Today, though, collaborative computing boils down to E-mail. With the PowerShare Collaboration Servers package, Apple intends to create a standardized central server environment into which third parties can plug components. The only plug-ins currently available for such a foundation are E-mail gateways; and for straightforward E-mail routing, Microsoft Mail and CE Software's QuickMail are superior. And while PowerShare includes time services, user authentication, and cataloging, the interface to these facilities is confusing and poorly designed.

PowerShare runs as a "headless" application. It has no direct user interface other than an administration tool; instead PowerShare provides server services to other Macs on a network. The package consists of three applications—Catalog Server, Mail Server, and Admin. The two server applications run automatically on start-up, consuming 2MB each, and the Admin application consumes 2MB when you're performing administration chores.

PowerShare provides four services—cataloging, electronic-mail routing, time coordination, and user authentication—in conjunction with PowerTalk software running on client Macs. The services are useful ones. Central time services keep all the clocks of client PowerTalk systems in sync, ensuring that PowerShare correctly replicates centrally maintained catalogs on client machines. The Catalog Server lets you maintain a central store of information about PowerTalk entities—users, groups, and network devices. PowerTalk-savvy applications (such as the AppleMail component of PowerTalk) use catalogs to locate entities on the network—for example, to find a user to whom E-mail should be routed. The Mail Server manages mail queues for store-and-forward delivery of E-mail and lets you snap in third-party external mail gateways. The catalog server also acts as an authenticator—verifying to one client that another client is an authorized user. Some PowerTalk-savvy applications, use PowerShare's authentication services to ensure that encrypted mail goes to the proper destination and to certify that a given encrypted message is from who it says it is.

In principle this is all great. And in practice, the services run as advertised—once you get them configured. But setting up and maintaining a PowerShare server is not a chore for the fainthearted. Configuration, ongoing management, and problem resolution—all things network managers must deal with daily—are odious tasks under PowerShare.

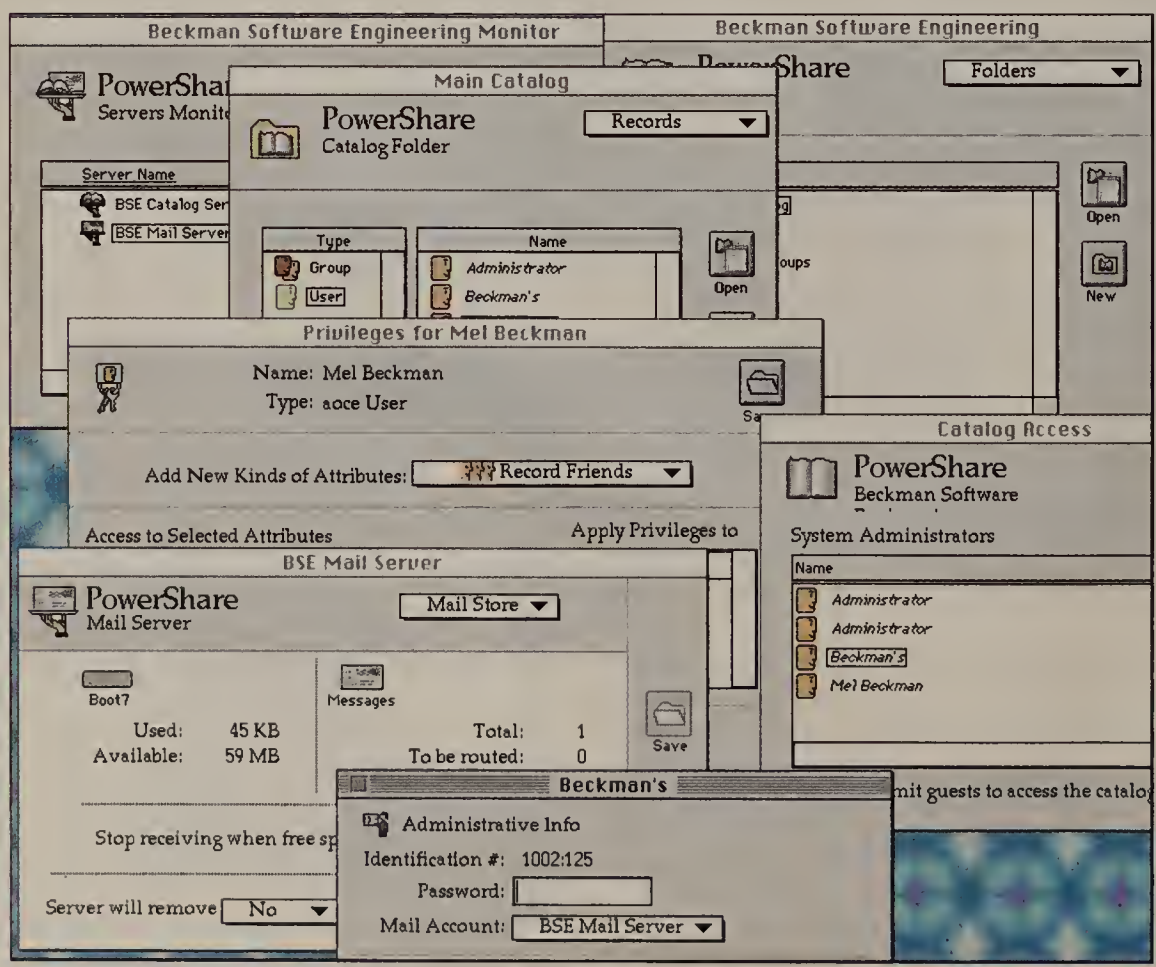
After three days dedicated to PowerShare, I could send mail from one machine to the others but not vice versa. Apple technical support couldn't help. I called ten times; six times I gave up after a minimum of 20 minutes on hold, and four times I actually spoke with Apple tech-support personnel. No one I spoke with had received any training on the product. When I asked how to get better PowerShare support, I was told I could buy a Technical Coordinator Answerline support contract for more than the cost of the software itself! If, after five years of experience as a network administrator, I have this much difficulty, I wonder how less experienced users will fare.

Making sense of Apple's sharp-looking but confusing (and unindexed) manual is anything but painless. The manual is a detailed guide for performing dozens of procedures, with no overview to make the entire process comprehensible.

Besides inadequate documentation, the Admin user interface requires dragging list entries between lists, with no visual cues about when such drags are allowed or what changes they effect. For en route E-mail, Admin shows that the messages are in an E-mail queue, but won't let you view information about the messages—such as the source or destination addresses—that is vital to diagnosing problems. The manual's terse troubleshooting section offers minimal help.

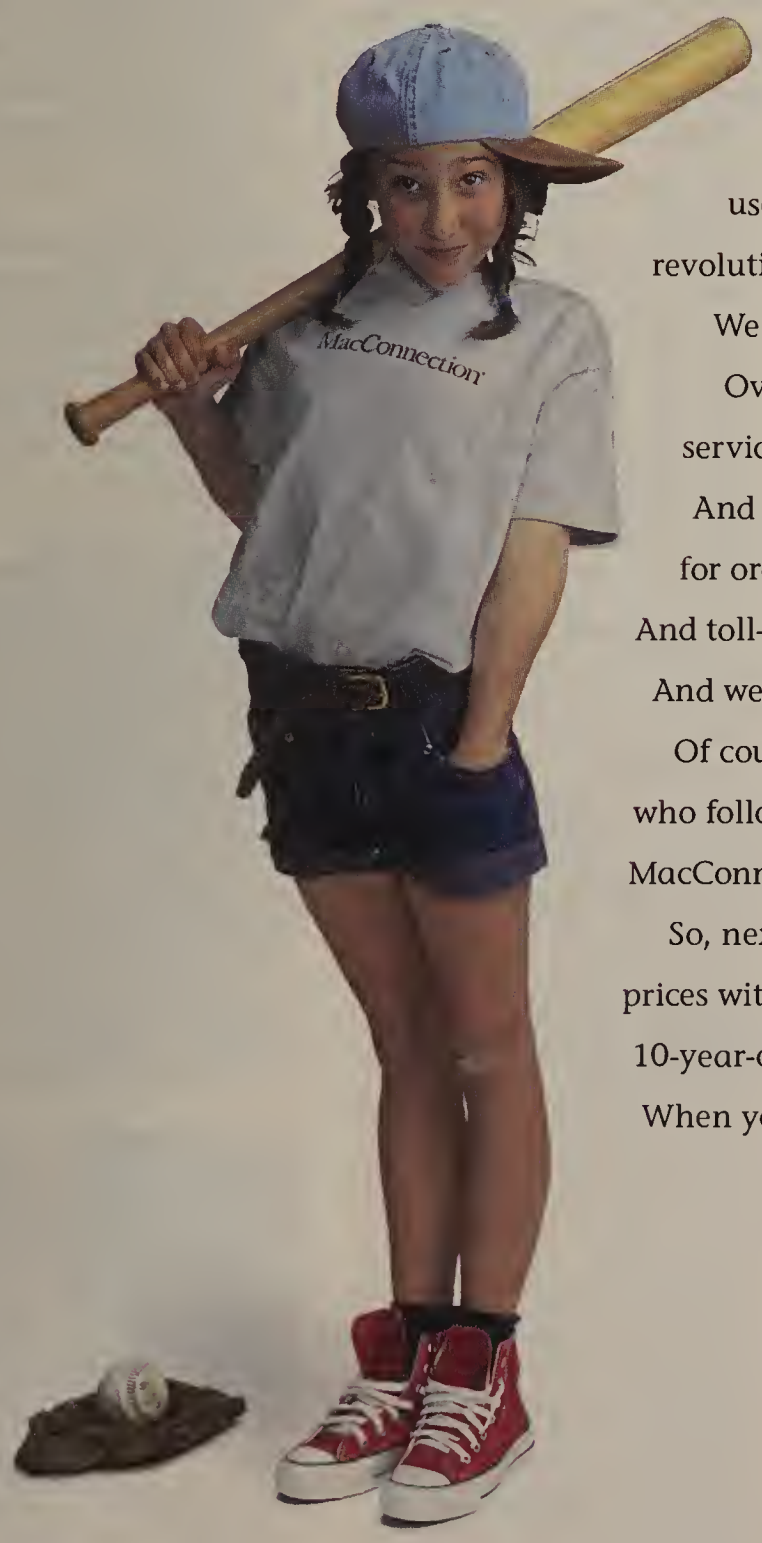
I've no doubt that collaboration computing is in the Mac's future. I also have no doubt that PowerShare, at least in its current form, isn't. Apple needs to overhaul the complex Admin application, add serious diagnostic aids, and provide comprehensive documentation before PowerShare will be ready for prime time.

—MEL BECKMAN




**Apple's PowerShare** The Admin application presents a bewildering array of windows and dialog boxes. Setting up and maintaining a PowerShare Server is not a task to be taken lightly.

We've changed the way people buy
Mac software and peripherals.




## Not bad for a 10-year-old.

Back in 1984, an idea was born: to provide users of the revolutionary, new Macintosh with a revolutionary, new way to buy their software and peripherals. We called our idea MacConnection.

Over the next 10 years, MacConnection pioneered every service breakthrough in the direct mail business. And every one was a home run. Like $3 overnight shipping for orders called in by 3:15 a.m. Money-back guarantees. And toll-free technical support, before and after the sale. And we did it all at prices that set the standard for value.

Of course, some of these innovations were imitated by those who followed. But no one delivers MacConnection services like MacConnection. After all, each one was our brainchild.

So, next time you want the best Mac goodies at the best prices with the best service, call the most experienced 10-year-old in the business.

When you call, wish us a happy birthday!

MacConnection®

*The Best Deal Going for 10 Years Running*

**800-800-3333**

# The Best Deals For

**Call for a FREE catalog!**
**800-800-3333**

We stock more than 3500 different products for your Mac. Money-back guarantee items indicated by ★.
If you don't see what you need here, just give us a call.

**HOURS:**
8 a.m. Monday continuous thru 5 p.m. Sunday ET

## VST Power Systems

30 DAY MBG

MacWEEK ◆◆◆◆ MacUser ★★★★

Run your PowerBook for 5 to 9 hours with the **ThinPack Complete**. Includes ThinPack rechargeable battery, utilities software, cable, and more. **ThinPack Plus** packs twice the power! Ideal for color PowerBook users.

2634 VST ThinPack Complete..... **$189.95**
2636 VST ThinPack Plus..... **269.95**

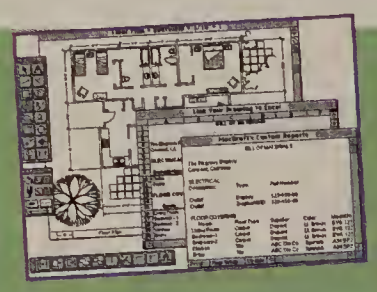
### POWERBOOK/NEWTON

**Abacus Concepts**
7106 StatView 4.01..... $439.
★ **Adesso ... 30 day MBG**
5579 PowerBook Battery..... 59.95
**Apple Computer**
1332 Apple Newton MessagePad 110 ... 599.
**ASD Software ... 30 day MBG**
15864 Wiz Tools for PowerBook ..... 59.95
★ **Battery Tech., Inc. ... 30 day MBG**
7562 140-180 Batt. 59.95 10392 Charg. 64.95
★ **Connectix ... 30 day MBG**
8441 CPU 2.0..... 55.
★ **Global Village ... 30 day MBG**
7720 PowerPort/Silver 269. 7710 /Gold 299.
**Lind Electronic Design**
14587 SBC-2 139.95 14841 BL4-200 179.95
★ **Sophisticated Circuits ... 30 day MBG**
7425 PowerPad Granite..... 69.95
★ **Technoggin, Inc. ... 30 day MBG**
14014 PowerPlate 3X 219.95 14015 5X 279.95
14013 PowerPlate Mini 3..... 154.95
**U.S. Robotics**
11841 WorldPort 14.4 Fax..... 254.95
★ **VST ThinPack ... 30 day MBG**
2634 Complete 189.95 2636 Plus 269.95
★ **Zoom Telephonics ... 30 day MBG**
10267 FaxModem PBK144..... 199.95

### BUSINESS

★ **Aldus Consumer Division ... 30 day MBG**
11558 TouchBase or 11557 DateBk. Pro ea. 49.
★ **Attain Corporation ... 60 day MBG**
8465 IN CONTROL 3.0..... 85.
★ **Best! Ware ... 30 day MBG**
14187 M.Y.O.B. 55. 14188 w/Payroll .... 109.95
★ **CheckMark ... 60 day MBG**
5863 MultiLedger 119.95 5862 Payroll 79.95
★ **Claris ... 30 day MBG**
3903 ClarisWorks 2.1 for Mac..... 199.95
3836 FileMaker Pro 265. 14732 MWrite Pro 95.
**Creative Think**
14540 Creative Whack Pack..... 29.
★ **DeltaPoint ... 30 day MBG**
12974 DeltaGraph Pro 3..... 139.95.
15819 DeltaGraph Pro 3 Compet. Upg.... 79.95

**Gold Disk**
12279 Astound..... $249.
★ **Inspiration ... 30 day MBG**
11269 Inspiration 4.0..... 165.95
★ **Intuit ... 30 day MBG**
11845 Quicken 4.0..... 39.95
★ **MECA ... 60 day MBG**
2796 Managing Your Money 6.0..... 34.95
★ **Microsoft ... 30 day MBG**
2884 Works 3.0 155.95 4902 Word 5.1 295.
3669 Excel 4.0 295. 5454 MS Office 3.0 475.
★ **Now Software ... 30 day MBG**
1793 Now Up-to-Date 65. 2366 (10 pk.) 519.
14027 Now Up-to-Date & Now Contact 99.95
★ **Palo Alto ... 60 day MBG**
6975 Bus. Plan 75. 4690 Mkt. Plan Tlk. 75.
★ **ProVUE ... 60 day MBG**
4582 Panorama 249. 11540 PowerTeam 95.
★ **Symantec ... 60 day MBG**
7636 ACT! (contact manager)..... 169.
★ **WordPerfect ... 30 day MBG**
4268 WordPerfect Mac 3.0A..... 299.95
4711 WP Upgrade (while supplies last) 54.95



## Innovative Data Design

**MacDraft 4.0** gives you full-scaled, multi-layered drafting environment with a complete set of sophisticated, yet easy-to-use drawing tools. It features keyboard editing for greater precision and integrated database.

9192 MacDraft 4.0..... **$349.95**

### GRAPHICS & DESIGN

★ **Abracadata, Ltd. ... 30 day MBG**
12083 Design Your Own Railroad..... $39.95
Architect., Interiors or Landsc. ea. 49.95
15914 Train Engineer..... 28.95
**Adobe**
4562 Adobe Premiere 4.0..... 499.95
1736 Illustr. 389.95 12886 Photoshop 549.95
★ **Aldus/Consumer Div. ... 30 day MBG**
11548 PageMaker 579.95 10864 Upg. 145.95
15021 Persuasion 324.95 15029 Upg. 145.95
1330 FreeHand 389.95 4728 Upg. 145.95
9229 DateBook/TouchBase Pro Bun. 4.0 89.95
13711 Home Pub. or 3506 SuperPaint ea. 49.95
1306 Paint & Publish Bundle..... 89.95
**Altsys**
1195 Fontographer..... 258.95
**Broderbund Software**
13603 Print Shop Deluxe 49. 3572 Kid Pix 34.
★ **Claris ... 30 day MBG**
14158 Impact 145.95 2518 MacDraw Pro 269.

60 DAY MBG

## Attain

Plan smarter with **IN CONTROL 3.0**. It combines the award-winning Action Outliner with full-featured calendars. Plan, prioritize, and schedule simultaneously.

8465 IN CONTROL 3.0..... **$85.**

## MDS Hard Drives

30 DAY MBG

Add storage and performance to your Mac with a compact, reliable **MDS Zero Footprint (ZFP) Hard Drive.** They give you acres of data storage without taking up valuable acreage on your desk! And they're easy to install, with no jumpers or DIP switches to set. Features include a sturdy metal case, two SCSI ports (for daisy chaining), two switched AC outlets, and a 2-year warranty. Includes a SCSI system cable and FREE Hard Disk ToolKit Personal Edition formatting software.

15814 270MB ZFP Hard Drive **$349.95**
15813 340MB ZFP Hard Drive..... **429.95**
11863 540MB ZFP HD ..... **599.95**
15117 1.2GB (Fujitsu) ZFP **949.95**
2219 1.08GB (Quantum) **999.95**

★ **Deneba Software ... 30 day MBG**
11055 artWORKS $99. 3227 Canvas 3.5 $259.
**Equillibrium**
9034 de-Babelizer..... 184.95
**Fractal Design**
10402 Painter 2.0A 265. 1564 PainterX2 94.95
★ **Harvard Systems Corp. ... 30 day MBG**
11193 Kai's Power Tools for Photoshop 119.95
**Imageline, Inc.**
14438 Super Bundle EPS (840 images) 94.95
14457 Value Pak 1 EPS (640 images)..... 64.95
**IMSI**
8927 TurboCAD MAC..... 79.95
**Innovative Data Design**
9192 MacDraft 4.0..... 349.95
★ **Manhattan Graphics ... 30 day MBG**
4990 Ready,Set,Go! 6.0..... 219.95
**Quark**
7612 QuarkXPress 3.3..... 589.95
★ **Ray Dream ... 30 day MBG**
12264 JAG II... 89. 4761 Designer 3.0.... 249.
**Synergy Software**
6617 KaleidaGraph..... 149.95
★ **T/Maker ... 30 day MBG**
3144 Incr. Images or 3147 CD-ROM ea. 89.95
**Virtus**
3185 WalkTh. Pro 249.95 3189 Virtus VR 64.95

### PROGRAMMING/UTILITIES

★ **Abbott Systems ... 30 day MBG**
5236 CanDpener 2.0 59. 9578 Kaleidosc. 25.
★ **Aladdin Systems ... 30 day MBG**
7410 StuffIt SpaceSav. 34.95 6740 Deluxe 69.
**Apple Computer**
1206 At Ease 45.95 7072 QuickTime Kit 75.95
1074 System 7.1 44.95 13047 S7 Pro..... 79.95
10478 System 7.1/Font Pack Bundle..... 62.
★ **CE Software ... 60 day MBG**
1727 CalendarMaker 39. 7927 QuicKeys 105.
★ **Central Point ... 30 day MBG**
5041 MacTools 3.0 85.95 11812 Upg. 49.95
★ **Claris Clear Choice ... 30 day MBG**
8571 Safety Suite..... 45.95
★ **Connectix ... 30 day MBG**
14789 RAM Doubler or 7830 Maxima 3.0 ea. 55.
★ **Dantz Development ... 30 day MBG**
9115 DiskFit Direct 1.0.... 29. 3393 Pro..... 72.
5255 Retrospect 145. 7945 Remote 2.0 259.
★ **Datawatch ... 30 day MBG**
4803 Virex 5.0 64.95 11486 SuperSet Ut. 94.95
**FWB, Inc.**
2999 Hard Disk ToolKit 125. 7929 Pers. 49.
★ **Golden Triangle ... 30 day MBG**
11731 TimesTwo (1.44)..... 49.95
14294 w/TouchBase or 14293 w/DateBook 59.
★ **Inline Software ... 30 day MBG**
15849 PopupFolder 34.95 1740 Redux Del. 49.95
★ **Kent Marsh Ltd. ... 30 day MBG**
9513 FolderBolt 73. 1839 NightWatch II 89.
**Metrowerks, Inc. CodeWarrior**
15444 Bronze..... 199. 15446 Gold..... 399.
**MicroMat Computer Systems**
3732 MacEKG II... 89. 2998 DriveTech.... 42.
★ **Now Software ... 30 day MBG**
12303 Now Compress 46. 12304 FUN! 29.95
6925 Now Utilities 4.0..... 84.
★ **Symantec ... 60 day MBG**
3955 Suitcase 53. 14244 SuperDoubler 79.95
5176 SAM..... 65.95 6748 NUM..... 95.

### EDUTAINMENT/GAMES

★ **Berkeley Systems ... 30 day MBG**
5737 After Dark 2.0x (30+ screens!)..... $29.
2198 More After Dark 25. 2196 Bun..... 39.95
1502 Disney Collection Screen Saver..... 29.
3392 Star Trek Screen Saver..... 29.
5179 Star Trek Screen Posters..... 29.
5262 ST Screen Saver/Posters Bundle.... 39.
**Bit Jugglers, Inc.**
14676 UnderWare..... 29.95
**Broderbund**
13601 The Treehouse..... 36.
★ **Claris Clear Choice ... 30 day MBG**
9322 Amazing Animation..... 39.95
★ **Davidson & Associates ... 30 day MBG**
MathBlaster Plus or ZooKeeper ea. 34.95
★ **Delta Tao ... 30 day MBG**
13714 Eric's Ultimate Solitaire..... 36.95
★ **Edmark Corporation ... 30 day MBG**
7155 Kid Desk 24. 7318 Millie's Math Hse. 29.
1078 Bailey's Book House..... 29.
12989 Thinkin' Things..... 39.
**GameTek**
13813 Jeopardy or 7433 Wheel of Fortune 24.95
★ **Great Wave ... 30 day MBG**
6693 Kid's Math or 2276 KT Deluxe ea. 27.95
★ **Inline Software ... 30 day MBG**
9792 Deliverance or 9797 Firefall Arcade 29.95
★ **Leister Productions ... 30 day MBG**
7126 Reunion 3.0..... 115.
★ **Maxis ... 30 day MBG**
13818 SimCity 2000 39.95 5279 Classic 24.95
★ **MECC ... 30 day MBG**
3959 Word Munch 19. 3963 Oreg. Trail 29.95
★ **Microsoft ... 30 day MBG**
2868 Flight Simulator 4.0 (CP)..... 42.
**Nordic Software ... 30 day MBG**
7723 Lang. Explorer or 7767 ClockShop ea. 29.
**Software Toolworks**
15815 Miracle Piano Software..... 84.95
★ **StarPlay Productions ... 30 day MBG**
3675 Crystal Caliburn..... 33.95
★ **Upstill Software ... 30 day MBG**
14140 Mangial (includes 340 recipes)... 33.95
★ **Voudette ... 30 day MBG**
4764 FLOWERscape (garden planner)..... 48.

30 DAY MBG

## Synergy Software

Get advanced data analysis and graphing capabilities with **KaleidaGraph**. Enter or import data and KaleidaGraph automatically creates a wide variety of graphs, charts, and plots. Easy text labeling, flexible input formats, and more.

6617 KaleidaGraph.. **$149.95**

# 10 Years Running.

## CD-ROM

**Broderbund**
Tort. & Hare or New Kid/Block ea. $34.
13509 MYST ..... 49.95
★ **Claris Clear Choice ... 30 day MBG**
13907 From Alice To Ocean (book w/CD) 46.95
**Compton's**
2314 Interactive Encyclopedia ..... 79.95
**FWB, Inc.**
10198 CD ToolKit ..... 49.
★ **Microsoft ... 30 day MBG**
1741 Music. Inst. or 6759 Cinem. '94 ea. 54.95
14913 Art Gallery or 14914 Dinosaurs ea. 54.95
8517 Booksh. '94 62.95 6943 Encarta '94. 89.95
**PhotoDisc, Inc.**
Full line of great CD-ROM images call
**Presto Studios**
11330 The Journeyman Project..... 44.95
★ **Spectrum Holobyte ... 30 day MBG**
1485 Iron Helix..... 59.95

## MULTIMEDIA/VIDEO

**Apple Computer**
3561 QuickTake 100 Camera..... 689.95
★ **Coda Music Technology ... 30 day MBG**
5604 Finale 3.0 549. 12307 F. Allegro .... 259.
★ **Great Wave ... 30 day MBG**
1014 ConcertWare Pro 1.0 ..... 129.95
**Macromedia**
5087 Director 4.0..... 849.95
**Noise Cancellation Technologies**
4919 Noise Buster ..... 119.95
**Nova Development**
11101 Kaboom! 29. 12278 w/More Kaboom 40.
**Radius**
1738 PrecisionColor Pivot (req. interf.) 879.95
14597 PhotoBooster ..... 799.95
**RasterOps PaintBoard Series Display Cards**
14750 Lightn. 24-bit 849.95 12909 Turbo XL 1199.
**Sony Multiscan Trinitron Monitors**
10529 CPD-1730 17"..... 1039.
11810 Multiscan 15" SF..... 499.95
★ **SuperMac/E-Machines ... 30 day MBG**
12704 20"+Col. 1849. 10321 Col. Pg. T16II 1299.
10322 Presenter ..... 449.95
8005 Ultura LX 1199. 7985 EtherDock 649.

**Berkeley Systems**

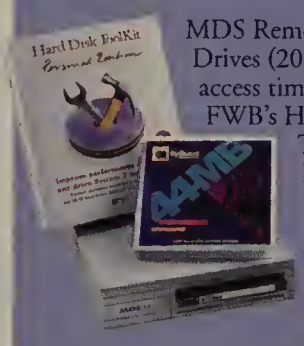
Delight in the magic of Disney with all your favorite characters in **The Disney Collection Screen Saver. After Dark** is the classic screen saver, with more than 12 displays with sound.

1502 Disney Collection Screen Saver ..... **$29.**
5737 After Dark ..... **29.**

## COMMUNICATIONS

**Apple Computer**
7073 Mac PC Exchange ..... $59.
14231 Remote Access 2.0 Client for Mac 54.95
**Asanté Technologies, Inc.**
2775 10/T Hub-8 249. 2772 10/T Hub-12 499.
**CommForce**
15862 4-Sight ..... 599.95
★ **CompuServe ... 60 day MBG**
1676 Membership Kit ..... 25.
★ **DataViz MacLink Plus ... 60 day MBG**
1823 PC Conn. 7.5 129. 12093 Tran. Pro 7.5 95.
★ **Dayna ... 60 day MBG**
11878 DOS Mounter Plus..... 54.95
8719 EtherPr. or 9888 (10BASE-T) ea. 339.95
★ **Delrina Technology ... 60 day MBG**
10080 FaxPRD for Macintosh 1.5..... 79.95
★ **Farallon Computing ... 30 day MBG**
11499 EtherWave AAUI Transceiver..... 109.
4869 PhoneNET Connector 10-Pk (DIN8) 195.
14545 Timbuktu Pro 135. 4866 Remote 129.

### MDS Removable Drives




MDS Removable Drives (20ms average access time) include FWB's Hard Disk ToolKit PE. Plus free Atticus Vista!

30 DAY MBG

15097 MDS 44MB (w/out cart.)..... **$239.95**
15802 MDS 88MB (without cartridge) **299.95**

★ **Freesoft ... 30 day MBG**
6115 White Knight 11..... $85.
14804 Second Sight..... 119.95
★ **Global Village ... 30 day MBG**
7889 TelePort/Bronze II 95. 2179 Gold 299.
**Hayes**
10822 ACCURA 2400 74.95 11422 96 Fax 159.95
11419 ACCURA 144+Fax144..... 169.95
**Insignia Solutions**
7557 AccessPC 3.0 ..... 85.
4089 SoftPC... 109. 10554 SoftPC Pro..... 215.
4433 Soft Windows for Power Mac..... 289.
★ **Practical Peripherals MCs ... 30 day MBG**
4885 288MT II V.FC 309.95 4879 144 154.95
**Shiva**
6555 LanRover/L..... 599.
14837 NetModem/E..... ea. 1479.
★ **Software Ventures ... 30 day MBG**
1964 MicroPhone II 109. 3455 Pro. 139.95
**Sonic Systems**
Ethernet Adapters (various)..... call
★ **STF Technologies ... 30 day MBG**
7639 FaxSTF 3.0..... 39.95
★ **SupraFAXModems ... 30 day MBG**
5337 FaxModem 144LC ..... 164.95
2413 28.8K Modem+14.4K Fax..... 309.95
★ **Synergy ... 30 day MBG**
6618 VersaTerm 5.0 119.95 6619 PRD 169.95
**U.S. Robotics**
11842 Sportster 14.4 Mac & Fax..... 169.95

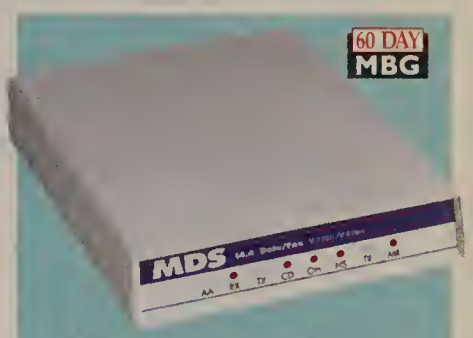
★ **Zoom FaxModems ... 30 day MBG**
7757 AFX... 69.95 15895 VFX 28.8..... $239.95
3553 FaxModem VFX V.32bis ..... 149.95
14152 FaxModem VFX 14.4V (Voice)..... 174.95

## UPGRADES & DRIVES

**Apple Computer**
3443 Power Macintosh Upgrade Card 649.95
★ **DayStar Digital ... 30 day MBG**
15782 Turbo 040 40MHz & 128K Cache 1049.
15924 80MHz Pow. Pro 601 for Pow. Mac 2149.
**FWB, Inc.**
14321 PE 170 409.95 14322 PE 340 FMF 579.95
14318 PocketHammer1000FMF ..... 1349.95
**IOMEGA**
8781 Mac Transportable 90 PRO..... 369.
10499 Transportable MultiDisk 150..... 479.
**Mobius Speedster 040 Accelerators**
15189 AC433i 33MHz w/128K Cache..... 489.
15191 AC433f 33MHz FPU w/128K Cache.... 689.
**Peripheral Land (PLI) full line available**
11470 Infinity 88/RW 44..... 549.

## INPUT/OUTPUT

★ **Adesso ... 30 day MBG**
15456 Extended Mac Keyboard..... 79.95
15457 ADB Mouse ..... 39.95
★ **Advanced Gravis ... 30 day MBG**
1482 Game Pad 39. 9963 MouseStick II 65.95
**Apple Computer**
3560 LaserWriter Select 360..... 1499.95
3475 Personal LaserWriter 320 ..... 899.95
3461 StyleWriter II..... 289.95
3479 Color SyleWriter Pro..... 599.95
**Caere**
4930 OmniPage Pro 5.0 489. 7705 Direct 89.95
7925 OmniScan ..... 299.95
**Epson**
8194 Action Scanner (ES-600C SCSI) 869.95
★ **GDT Softworks ... 30 day MBG**
2499 PowerPrint 99.95 12717 PP. NW 329.95
**Hewlett-Packard**
14689 ScanJet 2CX..... 999.95
15859 DeskWriter 520 ..... 289.95
**Interex Computer Products**
12862 105 Key Deluxe Keyboard ..... 99.
★ **Kensington ... 60 day MBG**
2547 Turbo Mouse 4.0 ADB..... 107.
★ **Microtek Labs, Inc. ... 30 day MBG**
13815 ScanMaker IIG 479.95 13814 IISP 749.95
1688 ScanMaker III 2359.95 1693 IIHR 1029.95
★ **Mouse Systems ... 30 day MBG**
7520 Little Mouse ADB 59.95 8001 Plus 29.95




### MDS 14.4 FaxModem

Hayes compatible V.32bis/V.42bis 14,400bps send/receive fax and data transmission. Includes all necessary cabling and data/fax software.

8478 MDS 14.4 FaxModem ..... **$139.95**

### Mobius Technologies

Plug-in Quadra performance for your current Mac. **Speedster 040 Accelerators** give your 030 Mac an instant speed boost of up to 700%! You also get a FREE 128K Cache for even faster acceleration! Supports Mac II, IIx, IIcx, IIsi, and IIci (IIx, IIcx, and IIsi require an adapter).

15189 Speedster 040 Accelerator 33MHz w/o FPU ... **$489.**
15191 33MHz w/FPU..... **689.**
15190 40MHz w/FPU..... **869.**

★ **Sophisticated Circuits ... 30 day MBG**
8009 PowerKey 75.95 8008 Remote.. $32.95
★ **Texas Instruments ... 30 day MBG**
13658 microLaser Pro 600 PS23 ..... 1399.
13659 microLaser Pro 600 PS65 ..... 1599.
★ **UMAX Scanners ... 30 day MBG**
13748 UC630 689.95 13751 UC1260 1149.95
**WACOM**
11259 ArtZ 6X8 Tablet ..... 325.95
**Xerox**
15345 TextBridge ..... 74.95

## ACCESSORIES

**Apple Computer**
11663 StyleWrit. II Cart. 23. 11669 (3 pk.) 63.
LaserWriter Toners: Pers. 65. LW II 85.
★ **Disks/Carts.: BASF, Fuji, 3M, Sony, Kao**
★ **Kensington Cases ... 60 day MBG**
14018 Tote.... 35.95 9585 Executive ..... 115.
★ **Targus Cases... 60 day MBG**
7369 Notepac... 35.95 1305 Universal .... 69.
13941 Business Commuter Case..... 114.95

# MacConnection®

## 800-800-3333

894MW

14 Mill Street, Marlow, NH 03456
**SALES** 603-446-3333 **FAX** 603-446-7791

### OUR POLICY

- VISA, MASTERCARD, AMEX. No surcharge.
- Your credit card is not charged until we ship.
- If we must ship a partial order, we pay freight on shipment(s) that complete the order (in U.S.).
- No sales tax, except Ohio (please add applicable tax).
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped First Class Mail.
- International orders: Add 2% surcharge and $2.30 insurance. Manufacturer support and upgrade eligibility may be limited outside the U.S.A. Some products not available for export, call or fax for information.
- COD maximum $1000. Cash or certified check. COD orders require an additional $4.50 charge, ship via UPS and may require addt'l UPS charges.
- 120 day limited warranty on all products. Defective software replaced immediately.
- Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- We are not responsible for typographical errors.

### SHIPPING

**Continental U.S.:** Total shipping charge on any order is $3. Barring events beyond our control, all credit card orders (non-CDDs) phoned in weekdays by 3:15 a.m. ET will ship Airborne Express for delivery the next business day. That's *same day* delivery for orders placed between midnight and 3:15 a.m.! (Some orders ship UPS Ground for next day delivery). Saturday delivery available to many areas upon request at no additional charge. Order all day Saturday thru noon Sunday for Monday delivery. Some areas required an extra day delivery.

**Hawaii, Alaska, Canada, Puerto Rico & U.S. Virgin Islands:** Shipping may require additional time/charges.

**All other areas:** Please call 603-446-3333 or FAX 603-446-7791 for information. Business offices: 603-446-7711 M-F 9 a.m.-5:30 p.m. ET.

### HOURS

8 a.m. Monday continuous thru 5 p.m. Sunday ET

### PCTV

EXPERT ADVICE FREE ON TV!

Don't just read about new computer products...

*Stewart Cheifet*

Watch them in action on:

**COMPUTER CHRONICLES**
MacTV PCTV

For schedule information call:

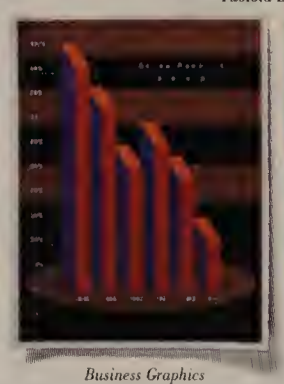
**1-603-863-9322**

© Copyright 1994 PC Connection, Inc. MacConnection is a division and registered trademark of PC Connection, Inc., Marlow, NH. MacTV is a trademark of PC Connection, Inc.

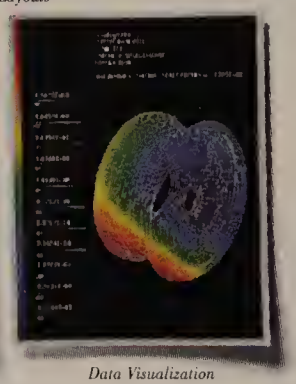
# *Now isn't it time you got the big box of crayons?*

There comes a time in your life when you just have to stop and say, I want all the colors and I want them now. If you have reached that point, congratulations: You're ready for the new Tektronix® Phaser™ 300 color printer. Prepare to be amazed. At a glance, you'll see that the color is amazingly crisp, rich and detailed. And because we know you don't like sitting around watching paint dry, we've made the Phaser 300 fast. Now you can spit out up to an 11"x17" full bleed image on nearly any kind of paper in two minutes flat. On top of all this, the Phaser 300 gives you PANTONE®-approved color matching, true Adobe® PostScript™ Level 2 and connects to any Mac, PC or workstation. Color me flexible. For a free Phaser 300 print sample or the name of your nearest Tektronix dealer, call 800/835-6100, Department 33C. For faxed information, call 503/682-7450, and ask for document #5002. You'll be amazed at what the big box of crayons can do. Of course, the Phaser 300 may not come with its own built-in sharpener, but hey, with color like this, you can forget about things getting dull.

*Tabloid Layouts*



*Business Graphics*



*Data Visualization*

*The new Phaser 300 can print a full bleed 11"x17" page on nearly any kind of paper in two minutes. Think fast.*

**Tektronix**

Phaser is a trademark of Tektronix, Inc. PostScript is a trademark of Adobe Systems, Inc. All other marks are trademarks or registered trademarks of their respective companies.

**Circle 143 on reader service card**

# OneWorld Fax

**Fax Server**

**PROS:** Entire office can share fax modems; easy to set up and configure. **CONS:** Cannot receive faxes; cannot queue more than one fax document at a time from a single CPU. **COMPANY:** Global Village Communication (415/390-8200). **LIST PRICE:** $999; two-line server and two PowerPort Bronze II modems $1499.

MW ★★★

FAX MODEMS ARE ONE OF THOSE technological advances that make our working lives easier. Unfortunately, technology is expensive, and putting a fax modem on everyone's desk adds up quickly.

Global Village's solution, OneWorld Fax, is one of the easiest network-fax products to install and use. It has limitations, but it lets an office share fax-sending resources without dedicating a hard drive and CPU to the process, which is a benefit that few other network-fax products offer.

The OneWorld Fax is about the size of a package of Oreo cookies. It's configured with one or two Global Village PowerPort Bronze II fax modems (supporting 2400-, 4800-, and 9600-bps fax-transmission rates) as well as connections for a 10BaseT and a LocalTalk network (you can use only one network type at a time).

Installing the hardware involves plugging three cables into the back of the unit—that's it. The next step is to configure the server with the administration software provided. Configuration includes setting up users and passwords as well as establishing a priority-fax threshold (shorter faxes are placed ahead of monolithic documents). The threshold length can be configured on a user-specific basis or for all users.

You must install GlobalFax software on all client Macs; it lets clients send faxes and choose the OneWorld server (more than one OneWorld server can exist on a network but they cannot be linked together). OneWorld comes with a license for 30 users. Additional user licenses are available.

The GlobalFax software that ships with OneWorld has a window in the Fax Center that allows you to monitor the progress of faxes in the OneWorld fax queue. Document icons represent faxes in this window; dots mark the faxes that belong to you.

Several volunteers installed the GlobalFax software, and we had them send multiple faxes to see how the product performed. Overall, the product performed quite well. Most users were familiar with the software and had little difficulty selecting the server and sending a fax document. The priority faxes did as promised and skirted right past a few large fax transmissions.

RICHARD RETHEMEYER

We discovered that the fax server cannot queue multiple fax transmissions from a single user, even for group address-book entries. In other words, if you're trying to send out more than one fax, OneWorld can't queue the second document until it has sent the first one. Also, users cannot access both fax lines simultaneously; this is a limitation of the GlobalFax software and not the server. Global Village is currently debating whether to add multiple data streams to future revisions of the software. We all vote yes!

Network faxing is a timesaving, cost-effective way to reduce expenses. Other products exist to send faxes, but Global Village has a product that's easy to install and use at a price that won't knock a hole in your bottom line.—MATT CLARK

# ProFiles 1.0

**File-Management Utility**

**PROS:** Keeps track of related files and folders; includes synchronization, compression, and expansion. **CONS:** High memory requirement; some file attributes appear only in pop-up lists; cannot display file contents. **COMPANY:** Dayna Communications (801/269-7200). **LIST PRICE:** $129.

MW ★★★

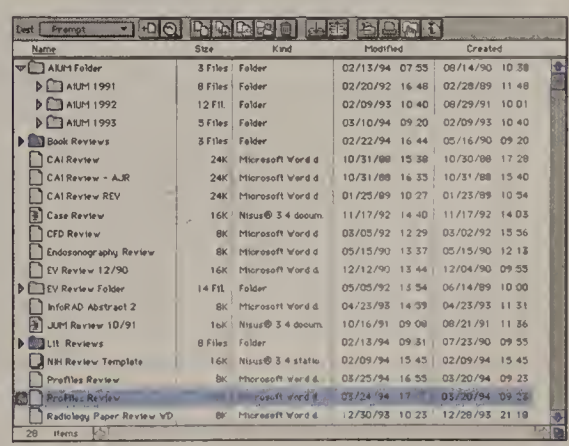
PROFILES IS AN UNUSUAL NEW UTILITY that lets you group related files and folders for quick access. Unlike programs that present a continually updated view of a volume's directory, ProFiles displays an empty file list: you have to add items to the list either manually by selecting them one at a time from a standard Open File dialog box, or automatically, using ProFiles' Find command. File lists can include volumes, folders, and files in any combination (see "ProFiles List"). You can view a folder's contents by clicking on a tiny triangle next to its name, just as you do with the Finder.

ProFiles' Find function works like the Finder's but is more comprehensive. You can specify up to three different search criteria (which you can save for later use), look for aliases whose original items have been deleted, or scan for files that contain a specific string of text. ProFiles' file list is also more functional than the Finder's in several respects—for example, you can view modification and creation dates, path names, and invisible files. But ProFiles only lets you display a file's type, creator, and version by ⌘-clicking to the left of the file name, and you can't edit any of the information in the list.

ProFiles provides an extensive suite of actions you can perform on files and folders. In addition to mundane functions such as copying, moving, and printing, you can create aliases, move items to the desktop, and turn sharing on and off. You can also compress or expand selected items by using an algorithm that you select in the preferences dialog box—ProFiles ships with Aladdin Software's StuffIt engine but also supports Symantec's AutoDoubler and DiskDoubler.

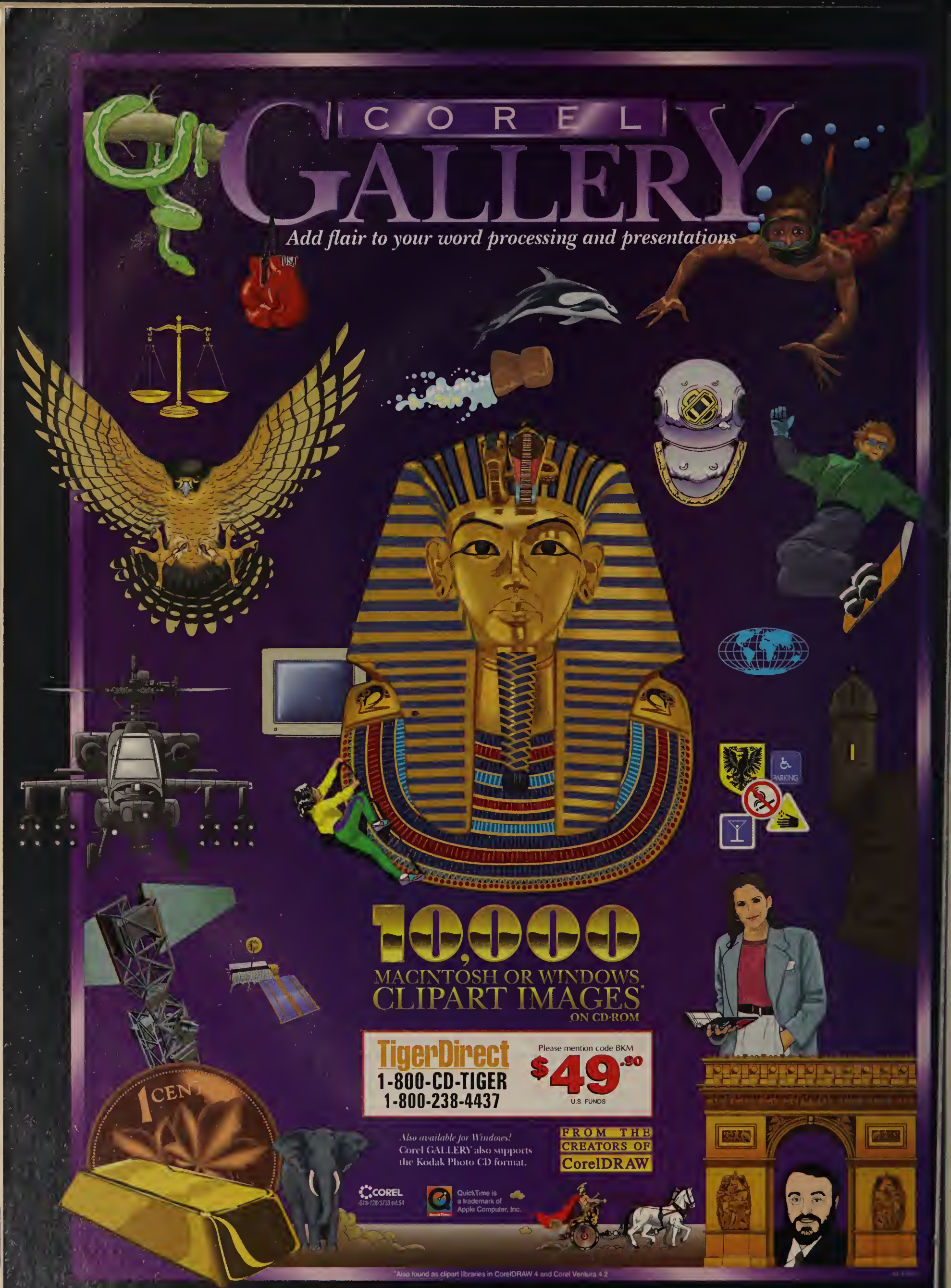
Because ProFiles can save file lists and can reference items on local or remote volumes, the program is useful for people who share files over a network. If you try to open an item on an unmounted disk, for instance, ProFiles attempts to load the correct volume for you—even logging on to a remote network with Apple Remote Access, if necessary. If you work with more than one Mac, ProFiles' synchronize function lets you update two folders so they both contain the most recent versions of files.

Unfortunately, ProFiles doesn't take the place of some of my favorite utilities. For example, PrairieSoft Software's DiskTop is faster for routine copying jobs, and



**ProFiles List** The icon to the left of ProFiles Review in the file list shows that the volume isn't currently mounted.

I still need a DA like On Technology's On Location to examine a file's contents. Also, ProFiles' recommended RAM allocation of 1MB may be a problem for computers with limited memory (however, it uses only 384K of disk space). Still, ProFiles is worth considering if you have to keep track of associated files and folders scattered over a network.—FRANKLIN N. TESSLER




Circle 78 on reader service card

# Mac-to-TV Converters

**Video Adapters**

## L-TV Portable

**PROS:** Includes all cabling; sturdy; inexpensive. **CONS:** Some flicker and distortion. **COMPANY:** Focus Enhancements (617/938-8088). **LIST PRICE:** $299.

MW ★★★

## The Presenter Plus Mac/PC

**PROS:** All cables included; supports Macs and PCs. **CONS:** Fit TV feature sometimes cuts off menus; murky focus; screen flickering. **COMPANY:** Consumer Technology Northwest (503/643-1662). **LIST PRICE:** $429.

MW ★★★

FOCUS ENHANCEMENTS AND CONsumer Technology Northwest now offer small, external TV-converter units that plug directly into your Mac's built-in video port and convert the Mac's video output to NTSC. These portable devices make using a TV as a Mac display easier than ever, but frankly, they don't deliver the same results as the NuBus and PDS cards designed for Mac-to-TV output.

### The Presenter Plus Mac/PC

This compact unit supports output to television from most Macs with built-in video—all Quadras and Centrises, the LC series, and those PowerBooks equipped with external video ports. Though you can use The Presenter with the IIvx and IIvi, it doesn't work with a IIci or IIsi.

The Presenter is a black plastic box slightly smaller than a Newton. The 26-ounce unit connects to a TV or VCR via either a composite-video or an S-Video cable (Consumer Technology supplies both). The unit operates from a 9-volt external power supply and includes an AC adapter. You must snap on a Mac adapter (also supplied) to use the included DB-15 computer cable. The cable works, but the adapter makes it hard to attach the cable snugly to the video port; a genuine Mac cable would be nicer. A second video port allows you to attach a VGA monitor to The Presenter along with the TV for dual output.

KEVIN CANDLAND

The Presenter Plus (top) and the L-TV Portable (bottom)

The device comes with a system extension and a bare-bones control panel designed primarily to fit your Mac's screen within a television monitor. You can activate this Fit TV feature by holding down the T key during start-up. Unfortunately, the software sometimes doesn't do the job. In my tests, the edges of the screen got cut off when I connected my TV to a Quadra 700 and an LC. In one case, the Apple and application menu icons were off screen—though the menus became visible when I clicked in the appropriate corner. To avoid this, you can type a specific resolution into the control panel, choosing a size that will place your desktop well within the bounds of the TV.

The Presenter's antiflicker hardware does a barely passable job of providing a stable image on the television screen; flickering persists, and the image is generally fuzzy and poorly focused.

### L-TV Portable

The L-TV supports the same Mac models as The Presenter, offers both composite-video and S-Video connections to a TV or VCR (all cables included), and has an additional port for simultaneous output to a VGA monitor. Both devices support cross-platform use and are lightweight and compact enough to travel with a PowerBook. However, the less-expensive L-TV feels sturdier. It comes with its own stand and ships with separate Mac and PC cables. The unit is housed in a slate gray case to match PowerBooks.

The L-TV's screen-fitting features are built into the hardware and are activated by DIP switches. An optional system extension is included to squeeze the Mac's screen to the TV's proportions if the hardware system fails to accommodate your Mac-to-TV configuration.

Unfortunately, like The Presenter, the L-TV failed to provide high-quality output via a composite-video connection. The unit provided a crisper, cleaner image, but mild flickering and conspicuous shimmers were still persistent. When I activated the device's picture-stabilizing feature, the picture improved, but the menu bar became distorted despite the screen-squeezing software.

In the end, I preferred the L-TV's sharper (but slightly less stable) image to The Presenter's murkier output. The Focus package is more solid as a whole.

—JOSEPH SCHORR

# Mac-to-TV Cards

**Internal Video Adapters**

## L-TV Pro NuBus

**PROS:** Supports wide range of Macs; displays up to 32,768 colors at 640-by-480-pixel resolution. **CONS:** Some flicker and distortion despite flicker-filtering software; can't switch between PAL and NTSC modes; cables not included. **COMPANY:** Focus Enhancements (617/938-8088). **LIST PRICE:** $399.99.

MW ★★★

## Simply TV

**PROS:** Diagnostic software included; impressively flicker-free image; supports both S-Video and composite-video connections. **CONS:** Screen mirroring degrades performance; no documentation on diagnostic software; resolution limited to 256 colors. **COMPANY:** E-Machines (408/541-6100). **LIST PRICE:** $439.

MW ★★★

AS A RULE, TELEVISIONS MAKE POOR computer monitors; colors aren't very accurate on an ordinary TV screen, and the resolution is relatively crude. Still, for certain applications—children's games, slide presentations, Mac training programs—a television can be useful as a low-cost display device. E-Machines and Focus Enhancements now offer PDS and NuBus video cards that convert your Mac's RGB video signal to NTSC (the U.S. television standard) or PAL (the European standard) so you can use your Mac with a television or VCR.

### Simply TV

The Simply TV is an easy-to-install video card that plugs snugly into the Processor Direct Slot (PDS) of any Color Classic, LC-series, Quadra 605, or Performa-series Mac. The Simply TV documentation promises you'll be up and running in five minutes—and it's absolutely true.

The card has two jacks: one for the standard composite-video cable that connects to most VCRs with an RCA-plug video-in jack, and one for televisions that support higher-quality S-Video input. A composite cable comes with the package; you simply plug one end into the card itself and the other end into the video-in port on your VCR or television.

The Simply TV's accompanying software is also very easy to use. A control panel includes two useful features: Safe-

*continues*

# Announcing OCR that's so accurate, anything else is simply pointless.

## Introducing OmniPage® Professional 5.0 from Caere, the leader in OCR.

We'd like to make our point perfectly clear.

OmniPage Professional sets the standard in OCR. Offering more accuracy, more power, and more flexibility than ever before.

In fact, it offers the most advanced OCR technologies in the industry—technologies that Caere has pioneered.

Only Professional helps you spend more time using scanned information instead of correcting it. Its breakthrough 3D OCR™ feature recognizes grayscale information during document scanning to greatly improve recognition of poor quality documents.

That's not all. Professional recognizes a broader range of documents, reading the most difficult characters and symbols with ease. A feat made possible thanks to its exclusive Language Analyst,™ neural network and fax recognition capabilities.

Professional also allows you to easily edit both text and graphics with its new Text Editor and 24-bit color image editor. And for maximum ease of use and flexibility, there's a new click-and-choose interface, too.

Accelerated for Power Macintosh

So get OmniPage Professional 5.0 for your Mac today. See your local Caere dealer or call for more information on the complete family of OmniPage products at 1-800-535-SCAN. If you own a competitive product, ask about our "Step up to OmniPage" program.

For superior performance, it's your best shot.

omniPAGE PROFESSIONAL

caere™

For Your Information.

Caere and OmniPage are registered trademarks of Caere Corporation. The Caere logo, True Page, and Language Analyst are trademarks of Caere Corporation. Power Macintosh is a trademark of Apple Computer Inc. All other trademarks are of their respective companies. © 1994. All rights reserved.

Circle 69 on reader service card

Title ensures that the Mac's menu bar won't be cut off on the TV screen; and Flicker-Free does a fine job of providing a stable, smooth image on screen with minimal flickering and bleeding. The control panel also supports screen mirroring, which makes the TV display the same image as the primary monitor. Mirroring, however, noticeably slows down performance and degrades the speed of screen redraws. A utility, Diagnostics, isn't needed to use the Simply TV, but it provides test patterns and color bars you can use to color-calibrate your TV.

### L-TV Pro NuBus

Focus Enhancements' L-TV Pro is a NuBus version of Lapis Technologies' original L-TV card, which was specifically designed for the PDS slot of LC-series Macs. The beefed-up L-TV Pro NuBus supports a wider range of Macs than the Simply TV, including the Mac II series, the Performa 600, the Centris 650, and the Quadra family. (Focus also has a smaller, 7-inch version for use in the Centris 610.) PDS versions of the card are still available for use with the Color Classic, LC series, and Performa 400 series.

The L-TV Pro offers up to 32,768 colors at standard-size 640-by-480-pixel resolution. Like the E-Machines card, the L-TV allows you to record output to a VCR, or display directly to a television via either a composite-video connection or S-Video connector. The L-TV does not come with cables; you must buy your own or get a $50.99 cable package from Focus.

The TV Show software allows you to use the television as a second display or to mirror your primary display. The easy-to-use control panel also provides flicker filtering to stabilize the screen image.

The two cards perform comparably. Overall, I found that the Simply TV provided a somewhat more stable image than the L-TV card, which, despite its flicker-reducing features, displayed an image that sometimes shimmered noticeably. Also, though you probably won't need a card that supports anything but NTSC in the United States, the L-TV Pro doesn't switch between NTSC and PAL, as the Simply TV does; a different L-TV card is necessary for use with PAL.

Of course, whichever card you use, the results are going to be less than gorgeous. Menu commands, for example, are hard to read on a television. And you can't expect anything more than an approximate match of the colors you see on a monitor. But for presentations and applications that don't require high-resolution images or small text, a television and a converter-equipped Mac are a respectable combination.—JOSEPH SCHORR

# SupraFaxModem 288

**Fax Modem**

**PROS:** Ultrafast file transfers; good fax software. **CONS:** 28,800-bps connections difficult to achieve; will need hardware update when V.34 standard is final. **COMPANY:** Supra Corporation (503/967-2410). **LIST PRICE:** $349.95.

MW ★★★★

SUPRA IS PAVING THE WAY FOR LIFE in the fast lane with its new line of 28,800-bps modems. Even though the new ITU-TSS V.34 modem standard has yet to be finalized, Supra has based its new product on a chip set from Rockwell that supports V.Fast, a preliminary version of the new modem standard. Since other manufacturers are using the same chip set, you should be able to find someone to connect with at the modem's maximum speed if you look hard enough. The modem also supports existing modem speeds from 14,400 bps on down; fax capability maxes out at 14,400 bps.

From a distance, the SupraFaxModem 288 looks like other desktop modems from Supra. Only the "288" label and the small print referring to 28,800-bps data reveal the product's true colors.

The Supra modem ships with PSI's Faxcilitate software, which packs all of its features into a convenient pull-down

RICHARD RETHEMEYER

menu that you access from the menu bar. You can send faxes to a single location, broadcast them to a group of recipients, and defer transmission to a preset time. When sending or receiving a fax, you get a full status report from the FaxActivity desk accessory. Although printing faxes is not automatic, it is fast. Just open the In Basket from the Fax menu, click on the appropriate fax entry, and choose the Print command. In my tests, faxes were clear and sharp and printed in seconds.

Although fax software is notorious for causing a litany of extension conflicts, I found Faxcilitate to be basically trouble-free, even when used on my new Power Macintosh. The only features I miss are the ability to print a fax automatically after it's received and an OCR engine to convert faxes into editable text.

The communications software, MicroPhone LT from Software Ventures, is the same basic application as MicroPhone II and MicroPhone Pro, but it doesn't let you create your own scripts. It does work with scripts created by the other versions of MicroPhone, though. The package ships with scripts for online services such as CompuServe and GEnie, and for Software Ventures' own BBS, should you need technical support.

Supra has clearly learned some lessons. The SupraFaxModem 288 has none of the shortcomings of the older V.32bis model, which had occasional speaker failures early in its production cycle and required several ROM upgrades to fix connection problems. I connected to a variety of online services and BBSs during my testing and had almost no difficulty getting a reliable hookup. Though full 28,800-bps service was hard to come by, I did achieve consistent 24,000-bps connections with Supra's own BBS. Unfortunately, the quality of local phone lines is going to be a limiting factor in supporting the new modem speed. One hopes the ITU-TSS can provide additional methods to handle difficult connections when the V.34 standard is ready.

Supra's own ROM upgrades can be done via its flash ROM and will be available for downloading from the company's BBS or on disk. Doing a ROM upgrade yourself involves running a program that downloads the software directly to the modem—a process that takes three to five minutes. But when the V.34 standard is final, the modem's data pump (processing engine) itself will have to be replaced. That will require returning the modem to the factory for installation, or swapping it for another unit. The initial price will be $69, but if you're willing to wait a few months for chip supplies to increase, the price will go down to $49.

Despite my difficulty in finding places to connect to at its maximum speed, the SupraFaxModem 288 is a very good performer, as good as or better than 14,400-bps modems I've tried, and the price of admission isn't terribly steep. Combined with fast, stable fax software and a good terminal program, it's hard to beat.
—GENE STEINBERG

# Macintosh Training

## Pure.
## Simple.
## Effective.
## Inexpensive.
## Award Winning!

The *Macworld Magazine* WORLD CLASS AWARD for training sits in my office. The readers of *Macworld* voted for **MacAcademy** by a margin of 2 to 1 over audio training systems, disk based systems, and all other training companies and products. Simply, we won because our training works! It's affordable, it's flexible, it covers an incredible amount of programs, it's simple to use and it's guaranteed! We won the award because over 250,000 satisfied customers are proof that MacAcademy training programs will work for you. Below please find a current listing of the MacAcademy Video Training Library. Each video is approximately two hours in length and costs only $49. Each video carries a complete money-back guarantee if not totally satisfied and can be upgraded when software is upgraded for only $14.95. *Randy Smith*

| | | | | | |
|---|---|---|---|---|---|
| 4th Dimension | 6 Videos | MacDraw Pro | 2 Videos | Quicken, Personal | 2 Videos |
| Canvas | 5 Videos | Mac P & L | 3 Videos | Quicken, Business | 2 Videos |
| ClarisWorks | 6 Videos | MacProject Pro | 4 Videos | QuickTime | 1 Video |
| Design & Layout | 1 Video | MacWrite Pro | 3 Videos | SuperPaint | 3 Videos |
| Desktop/PrePress | 2 Videos | MS Works | 4 Videos | Troubleshooting | 3 Videos |
| Director | 4 Videos | Networking | 1 Video | Word | 4 Videos |
| Excel | 5 Videos | Now Contact/ | | WordPerfect | 4 Videos |
| FileMaker Pro | 4 Videos | Now Up-To-Date | 1 Video | | |
| Mac Fonts | 1 Video | PageMaker | 6 Videos | | |
| FreeHand | 4 Videos | Peachtree Accntg. | 3 Videos | | |
| HyperCard | 3 Videos | Persuasion | 2 Videos | | |
| Illustrator | 4 Videos | Photoshop | 6 Videos | | |
| Infini-D | 2 Videos | PowerBooks | 2 Videos | | |
| Integrate Programs | 1 Video | PowerPoint | 2 Videos | | |
| Lotus 1-2-3 | 3 Videos | Premiere | 3 Videos | | |
| Macintosh 7.X | 4 Videos | QuarkXPress | 3 Videos | | |

**$49** each

Live Training Workshops Available in 32 major cities throughout the United States.
Please call for complete schedule and/or on-site corporate training.

**Video Training Available in English, Spanish, Japanese, German, & French**
**Video Training Also Available For Many Windows Programs**

Please add $3 per order along with $1 per video for shipping and handling.

**TOLL FREE ORDER LINE: 800-527-1914**
**ORDER FAX LINE: 904-677-6717**

Checks, PO's, Credit Cards Accepted 48 Hour Delivery
100 E. Granada Blvd., Dept. MW894, Ormond Beach, FL 32176

**MacAcademy**®
*"Where the world learns the Macintosh"*

Circle 106 on reader service card

# DiskDoubler 4.0

**File-Compression Program**

**PROS:** Compresses and expands files faster and tighter than rivals; files can be dragged among archives. **CONS:** Lacks many great features of previous versions; archives incompatible with previous versions; outrageous phone-help price. **COMPANY:** Symantec Corporation (503/334-6054). **PRICE:** $79.95.

MW ★★★

THE ORIGINAL DISKDOUBLER (DD) could compress files into a disk-space–saving format faster and more tightly than its competition. And DD was breathtakingly simple to use. You highlighted a file's icon and chose Compress from the DD menu in the Finder. A simple double-click sufficed to both expand and open a DD file. But it didn't take long for rivals StuffIt (Aladdin Systems) and Now Compress (Now Software) to duplicate DD's Finder-menu interface—and its compression efficiency. The world waited: would 4.0 again set DD in the forefront?

In pure efficiency terms, yes. DD has five compression settings, three of which are new. The default, DD1, compresses by a few percentage points faster and tighter than other programs. Other options strike different positions on the speed-and-tightness trade-off scale. For example, the AD1 setting compressed my test files in one-sixth the time of StuffIt, but it compressed them only half as much. At the opposite extreme, the DD3 setting crunches files to an average of 40 percent of their original size, but it takes a third longer than StuffIt to do the deed. You realize the most dramatic speed gains, however, when expanding DD's files; regardless of the compression setting, DD files decompress about twice as fast as StuffIt or Now Compress.

DD can also open or convert StuffIt files. (StuffIt, on the other hand, can open a long list of Mac and IBM compression formats.) Unfortunately, the three new DD 4.0 file types can't be opened by older DD versions. Better send the free DD Expand 4.0 program to all your digital correspondents, or you'll be stranded on an island of incompatibility.

DiskDoubler also now offers archiving, which lets you compress multiple files into a single icon. Using a clever Finder-like interface, you can add files to, remove files from, or move files among archives, simply by dragging icons. Alas, you must do all this from a separate application; for the first time, DD users have to step out of the Finder's familiar bounds.

Unfortunately, what you notice most about the new DiskDoubler isn't what's new. It's what's missing. You can no longer add passwords to self-extracting files. You can no longer opt to recompress files automatically. The Skip button (when compressing a group of files) is gone. The Verify/Repair program (helpful for inspecting flaky archives) is no longer included. Gone, too, is Fifth Generation's toll-free help; instead, Symantec charges $25 per call after 90 days.

Symantec also removed the most loved feature of all: DD's ingenious ability to expand *and* open a compressed file with a double-click. You must now double-click once to expand a file, wait, and then double-click again to open it.

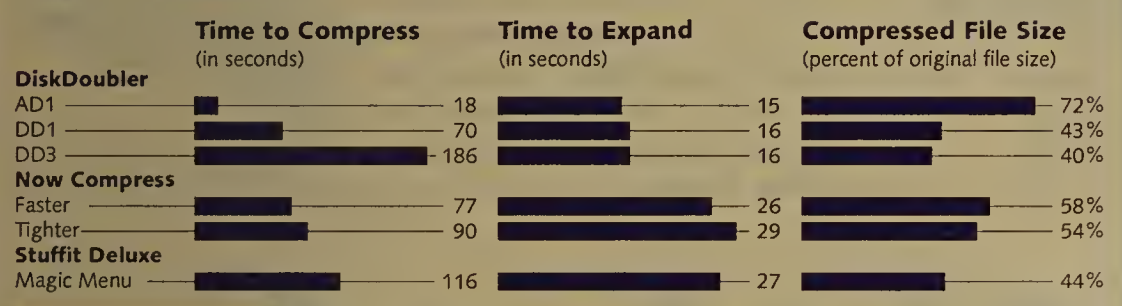
Fortunately, DD users' venomous response to the 4.0 "downgrade" has had a salutary effect: the company finally promised to restore the auto-open feature in version 4.1, projected to be available in mid-June.

When that day arrives, DiskDoubler again should become the most elegant, efficient, easy-to-use file-compression program available. Fie on thee, Symantec, for stripping DiskDoubler of its original flexibility and charm—but blessings on thee for putting the best of it back.

—DAVID POGUE

## How Does DiskDoubler Compare?

**Smaller bars are better.**




**BEHIND OUR TESTS** Tests were conducted on a Quadra 800, with Verify Writes off. Files included a QuickTime movie; an application; a FileMaker Pro database; font, music-notation, text, PICT, and 24-bit TIFF files; and Excel, FreeHand, PageMaker, and Word files.

# Full Contact 2.01

**Personal Information Manager**

**PROS:** Object-oriented database heart leaves flat-file and relational engines in the dust. **CONS:** Makes managing your personal information a full-time job. **COMPANY:** FIT Software (408/562-5990). **LIST PRICE:** $169.

MW ★★★

THE PERFECT PIM? IMAGINE A VIRtual secretary on speed, filing and cross-filing all your data so that you could instantly retrieve every phone conversation, meeting, project, person, phone number, company, address, and correspondence related to a contact, just by typing in that contact's name. FIT Software's Full Contact (FC) is the closest approximation of this ideal currently available: it's an object-oriented database in which almost every piece of information occupies its own record, and related records are linked for easy access. The advantage of FC is a database that's fast, versatile, and powerful. The disadvantage is that to use this personal organizer, you must already be incredibly organized.

Records in FC are divided into six types: Activities, Contacts, Phones, Addresses, Companies, and Notes. Any record can link to any other record; a contact might be linked to several notes (conversations), three other contacts (coworkers), and two phones. Each of those records could then have other records linked to them—for example, one of the phone numbers could be linked to a company and other contacts. Linking records establishes software connections between bits of data that you have already related in your mind. You can create a new, linked record from within another record, or you can link existing records by dragging and dropping one onto another.

Having to manually link all your data gets cumbersome, so FIT thoughtfully provides Quick Phone Call Entry (QPCE) and Quick Contact Entry (QCE) screens. Filling in a QPCE is a snap; FC offers its best guess at the company or contact name while you type, complete with a pop-up menu of qualifying candidates. FC also has an extensive series of templates to ease importing data. I switched from Now Software's Now Contact and Now Up-to-Date with hardly a hitch—not a bad trick considering their semilinked nature.

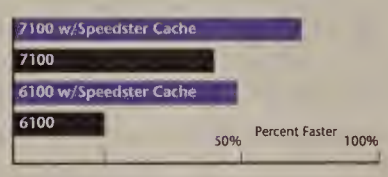
Superlists—windows that display records as fields in columns—are the main

*continues*

# Power Upgrades for all your Macs.

## Instant speed for your Power Mac.

**Boost your Power Mac's performance by up to 48%** with the Speedster 601 Cache. This 256K level 2 static cache maximizes both emulated and native performance, with **100% Compatibility.** Plus, the Speedster 601 Cache can be easily installed in less than 10 minutes by just plugging it into the cache slot on the Power Macintosh 6100 or 7100.

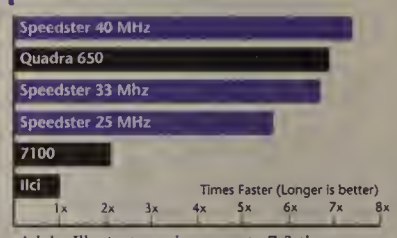



*Speedster 601 Cache increases performance up to 48% (MacBench 1.1 Processor Test).*

| New Lower Prices! | Speedster 040™ | DayStar Turbo 040™ |
|---|---|---|
| Speedster 25i | $399 | n/a |
| Speedster 33i w/cache | $499 | $749 |
| Speedster 33f w/FPU & cache | $699 | $949 |
| Speedster 40f w/FPU & cache | $899 | $1,049 |

## Blazing '040 power for your 030 Mac.

Now is the best time to accelerate your Macintosh with the Speedster 040. Starting at just $399, you can upgrade your Mac IIci, IIsi, IIcx, IIx or LC to '040 power and immediately get blazing, 100% compatible performance. **Speedster 040 runs all your software up to 6X faster!** You'll even outperform Power Macs running 680X0 software by up to three times. Speedster's low-cost design **saves you almost 35% over the competition.** Plus you get a 3-year warranty, 30-day money-back guarantee, and unlimited technical **support rated "Excellent"** by *MacWorld Magazine.*




*Adobe Illustrator redraws up to 7.3 times faster with the Speedster 040 Accelerator.*

# Choice Displays for all your work.

## Award winning quality and value.

Why settle for scrolling around on a tiny 14" monitor when you can **view your entire document** on a award-winning Mobius Display–that's over three times more desktop! Just plug it directly into your Macintosh and view up to 256 gray-levels* on the bright, razor-sharp screen. **Now available for over 50 Macs,** Mobius Displays are rated at over 80,000 hours MTBF—the most reliable in the industry. That's why we back them up with an unprecedented **Two Year Warranty.** And starting at just $399, Mobius Displays are best value you'll find anywhere. So choose the display that *MacWorld* named **"Editor's Choice."**

MACWORLD MW EDITORS' CHOICE

MOBIUS

**For Macs w/supporting built-in video, video card may be required; call for more information.*
*How to Order: We accept Visa, MasterCard, AmEx and Discover. Corporate and Education POs. Cache is free with Speedster 33i, 33f, and 40f models only. Competitive pricing as of 4/22/94. All trademarks are property of their respective holders. Mobius, 5835 Doyle Street, Emeryville, CA 94608, (510) 654-0556.*

**Call to Order or Get Your Free Performance Handbook**

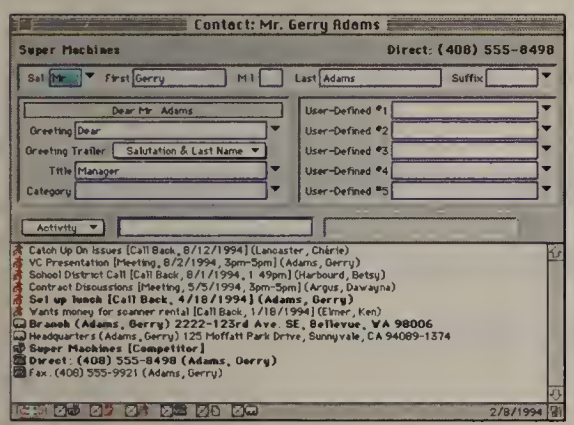
**800-800-4334**

Circle 109 on reader service card

way to view your data. Each record type has a separate Superlist, which is good and bad. You won't confuse a company with a contact, but you can work directly with only one type of data at a time. (You can't, for instance, bring up a list of all the Companies *and* Contacts in California.)

You select records to view by using filters, FC's version of a search—you define the criteria, such as a range of dates, and FC filters the records. Filters are fairly versatile, and you even get a dialog box loaded with pop-up menus to help you build the perfect filter. But FC depends on filters heavily, and using them is a chore. You can't edit a filter unless you've first used it, which means you select a filter, wait as the software sorts, edit the filter, then wait again. Of course, you can build a filter every time you want a new search, but it's not much quicker, and you end up with a bazillion filters.

There are pleasant amenities and cool features sprinkled throughout FC, but the program makes using them an effort. When linking to a contact record in a QPCE, FC forces you to enter the contact's last name and then first name, separated by a comma; elsewhere, the software concatenates a phone number with its descriptor (Main, Fax, and so on), so easy lookup is impossible. FC has a word processor with drag-and-drop mail merge, but it makes you juggle two pop-up menus nearly every time you write a letter. You can create repeating events, but only the first iteration appears in the Activities window. There are also a ton of tiny irritants: Notes windows can't be




**Information Chain** Each record in Full Contact can be linked to many others. Gerry Adams's record shows addresses, phone numbers, and related contacts, plus meetings and conversations.

resized, new Activities always appear halfway off the screen, and Superlists don't automatically re-sort. Topping this catalog of unpleasant surprises is the lack of a database-wide search function.

Full Contact can handle with speed and style tasks that would choke other PIMs. But 90 percent of the time, using Full Contact feels like a full-time job.
—CAMERON CROTTY

# Scenery Animator 1.0.4

**Landscape Rendering and Animation Software**

**PROS:** Renders high-quality pictures of real-world locations based on USGS map data; lighting and other features can be customized. **CONS:** Program's map coordinates don't correlate to paper maps. **COMPANY:** Natural Graphics (916/624-1436). **LIST PRICE:** $149; additional landscapes $10 each.

MW ★★★★

IT'S AMAZING. NATURAL GRAPHICS has squeezed a goodly portion of Yosemite Valley—from the massive face of El Capitán down to individual evergreen needles—into 170K of disk space. Yosemite is only one of the many three-dimensional landscapes that Scenery Animator lets you explore; also included are views of Oahu, the Grand Canyon, and Mount Saint Helens. Landscape files for additional locations—including Aspen, Seattle, San Francisco, Pikes Peak, Crater Lake, the Black Hills, and others—are available for $10 each.

Scenery Animator uses U.S. Geological Survey data (sampled every 30 meters) to create remarkably realistic 3-D representations of terrain. You can render an individual scene—complete with optional trees, water, snow, and clouds—or create an animation that flies the viewer through a landscape. You use real-world locales, or devise your own scenery with the program's fractal landscape generator. The program is smart (it won't let you place trees on a sheer cliff, for example), and it offers numerous customization options (you can specify that no trees grow above an elevation of 3000 meters, for instance, or redden a scene's colors to simulate evening light).

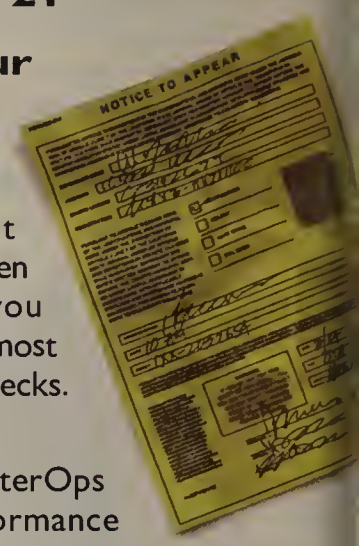
You navigate a landscape via several windows and control panels. The Map window shows an overhead view, with color-coded elevations. You view a scene through a simulated camera. The Camera View window shows a rough view through the camera's lens; when you've got the view you like—choosing a standard, wide-angle, or telephoto lens—you can render a detailed version of the scene and save it in PICT or TIFF format. The camera can be placed anywhere in a landscape: hovering 100 meters above a mountain peak, or gazing up at the sky through the leaves of a tree. You can also store a series of camera positions as key frames and create an animation, which can be saved as a QuickTime movie, a PICS file, or a series of PICT images. As with any program that renders complex pictures, I'd recommend a fast processor or a lot of patience (or both). Rendering time depends on the complexity of the scene, the rendering method used (faceted produces a rough landscape of large triangles, while smooth or textured produce more detailed—and slower—renderings), and whether optional elements such as trees or clouds are added. I chugged along OK on my Mac IIcx, using in other programs while scenes rendered in the background, but was much happier when I borrowed a Quadra 800.

**From Dawn to Dusk** Scenery Animator lets you position a simulated sun to create shadows. You can alter the colors of land, water, and sky—say, to darken a cloudy landscape or add a rosy tint to a sunset scene. Here, the same image was rendered with different light and color settings to show dawn and dusk.

Scenery Animator is a pleasure to use. The manual is clear and informative, the program is well designed (although navigating through landscapes takes some practice), many customization features are provided, and the rendered pictures and animations are impressive. My main complaint is that the program's map coordinates can't easily be matched to the coordinates on a paper topographical map (Scenery Animator uses coordinates relative to the lower left corner of the map, rather than absolute coordinates such as longitude and latitude). For example, to create a digital picture of my campsite in Yosemite, I'd have to compare the terrain on the paper and computer maps and estimate where the site was. A Natural Graphics representative said the company is considering adding digital line-graph overlays, which would show roads and other man-made features. I also wish I could display distances in feet as well as meters (I can't help it—my public school failed to drum the metric system into my head), and for some graphics tools to add objects to scenes. But Scenery Animator's flaws are few, and I'd recommend it to artists, animators, educators, and armchair travelers.—ERFERT FENTON

# GRAPHICS ACCELERATION SO FAST, YOU MIGHT WANT TO WATCH YOUR REARVIEW MIRROR.

## Get in the fast lane with Horizon 24™ and satisfy your need for speed!



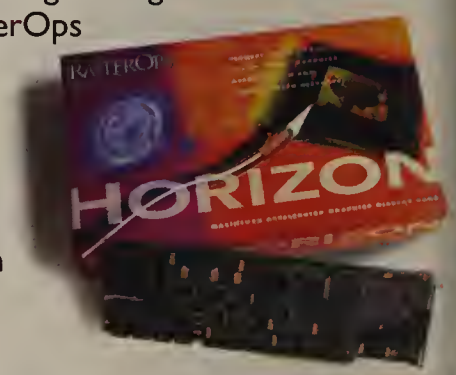

When manipulating 24-bit color images on large-screen displays, the last thing you need is another delay. But even the most powerful Macintosh® suffers bottlenecks.

That's why Horizon 24 from RasterOps is your ticket to higher performance 24-bit color. Fast. Responsive. Driving high-resolution displays to the limit. Horizon 24 speeds up more graphics primitives than any other Macintosh accelerator, making it the fastest graphics card the state of technology allows.

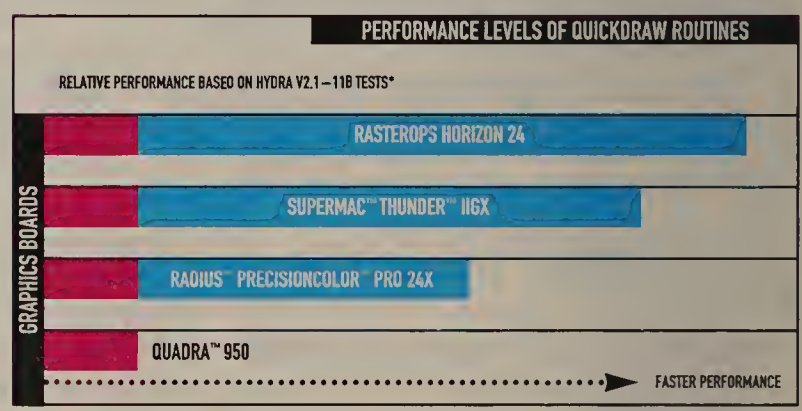
Accelerated for Power Macintosh

### Doing time in Photoshop?

Sporting twin AT&T 3210 digital signal processing chips, the RasterOps DSPro™ daughtercard makes Photoshop™ barely street legal. It runs through time-intensive filters like a trooper, assuring you of optimum performance in Photoshop.




So get out of the slow lane. Call **1-800-SAY-COLOR** for more information or the location of a dealer near you.




RASTEROPS®

2500 Walsh Avenue • Santa Clara, California 95051

©1994 RasterOps Corporation. All rights reserved.
RasterOps and the RasterOps logo are registered trademarks. Horizon and DSPro are trademarks of RasterOps Corporation, and all other trademarks and tradenames are property of their respective owners.
*Results based on tests run on a Quadra 950 with available products as of 2/1/94.

**Circle 90 on reader service card**

# Koyn Fractal Studio 2.02

**Educational Software**

**PROS:** Creates colorful fractals at up to 2450 dpi; draw-program–like fractal design; fast rendering. **CONS:** Cannot create many classic fractals; poor program design; saves images only as PICT. **COMPANY:** Koyn Software (314/878-9125). **LIST PRICE:** $149.95.

MW ★★★

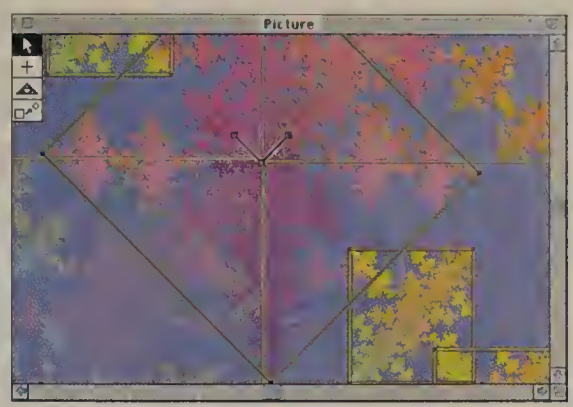
FRACTALS—SHAPES CONTAINING infinite detail and that often exhibit self-similarity (portions of the shape resemble the whole shape)—are one of the most spectacular intersections of science and the visual arts. Koyn Fractal Studio enables you to generate beautiful fractals of your own design by means of Iterated Function Systems (IFS). To do so, you first draw the basic outline with a simple polygon tool, either freehand or by using an imported image as a template. You then clone the outline one or more times, alter each clone, and hide all the outlines (see "Handmade Fractals"). You can color the background, assign a color to each part of a fractal, and specify a number of attributes that blend colors and create textures.

At 72 dpi, Fractal Studio renders 8-bit fractals relatively quickly (in a few minutes), especially if your Mac has an FPU. You can specify renderings at up to 24-bit color and 2450 dpi, but these require major investments in RAM and time. Once your fractal has been rendered—and Fractal Studio is capable of beautiful renderings—you can zoom in (up to 1 million times, according to Koyn Software) on any area. Rendered fractals can be saved only as PICT files.

Although Koyn Software says the program is for fractal innocents and experts alike, prior experience certainly helps. The manual's tutorial section and the collection of sample fractal files assist novices to get going; but frankly, few people can make fractal geometry seem easy, and the manual's author is not one of them. Sadly, the design of the program doesn't help either. Among other things, there are tools that should more logically be commands, and commands that are tools in many graphics programs. There is no easy way to make regular polygons or create a clone that is a specific fraction of the basic outline's size. And defining a color scheme requires visits to a variety of dialog boxes.

Iterated Function Systems–generated fractals range from abstract shapes to mimics of natural forms such as leaves, trees, clouds, and snowflakes, but IFS is not the only fractal-generation method. There are many classic types of fractals—including the Mandelbrot and Julia sets and realistic fractal landscapes—that Koyn Fractal Studio cannot generate; for these types of fractals, you will have to turn to a program like Springer-Verlag's more versatile but more challenging Beauty of Fractals Lab. Koyn Fractal Studio is a reasonable choice if you are interested in Sierpinski triangles or naturalistic forms, but it is not an all-fractals-for-all-people program. That program has yet to be written.

—ROBERT C. ECKHARDT




**Handmade Fractals** In Koyn Fractal Studio you scale, rotate, skew, and move a part of a fractal by dragging on the handles attached to its outline. The mathematically inclined can specify transformations numerically.

# The Cruncher

**Educational Spreadsheet**

**PROS:** Creative; easy to use; educational. **CONS:** Slow; lacks necessary spreadsheet functions. **COMPANY:** Davidson & Associates (310/793-0600). **LIST PRICE:** $59.95.

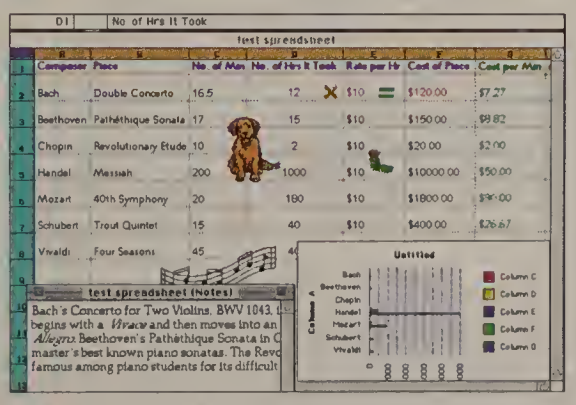
MW ★★★

KIDS AND ADULTS SHOULD LIKE THE Cruncher, a combination educational spreadsheet and business application. As a teaching tool, it shows kids spreadsheet basics; as a spreadsheet, The Cruncher can calculate and graph.

The Cruncher's clever, creative animated tutorials demonstrate how spreadsheets calculate. A selection of projects shipped with The Cruncher can help kids figure out if their families can afford a dog or a new stereo. You can even customize recipes: using the Recipe Converter template, you type in a recipe and the number of people the original recipe serves, then indicate how many people you want to serve, and the template converts it for you. (This is a use I'd never thought of for spreadsheets—I'm sure my future dinner guests will be grateful.)

The animations are cute, but they make The Cruncher sluggish; on my Mac IIci, I often waited a few seconds before actions occurred. The Cruncher is aimed at families, teachers, and students, many of whom have lower-end machines and may find the application quite slow.

You can decorate spreadsheets with color text and pictures provided in the program's Sticker Picker. You select an item in the Sticker Picker, assign a sound to it, and place it anywhere in the spreadsheet. The Cruncher also speaks: select a cell and hit a button, and a computerized voice reads to you. It even knows to read *TN* as *Tennessee* and *lb.* as *pound*. Why this is useful I'm not really sure, but kids will probably enjoy it.




**The Price of Art** The fictional data in this spreadsheet shows how much great works of music cost to write. The graphics are from The Cruncher's Sticker Picker.

The Cruncher performs basic spreadsheet functions like graphing, number formatting, and calculations. But users accustomed to more-sophisticated spreadsheets like Microsoft Excel will miss such functions as the ability to wrap text in a cell and to sort data. Also, calculation formulas can be hard to understand. For some functions, you can use basic spreadsheet functions like **=D3/F3.** But if you want to multiply that number by five, you have to write **=SUM(D3/F3*5).** It's hard to know when you need to insert the function type (**SUM**, in this case) in the formula.

Aside from the calculation confusion, the only technical problem I had with the product was its sound. Even though my Sound control panel was set to zero, The Cruncher played music at a normal level—to the dismay of my coworkers—and I couldn't figure out how to turn off the start-up sound. Other than that, the Cruncher is uncomplicated. Information is easy to find in the manual and online, and when I called, Davidson's technical support was helpful.

The Cruncher is more effective as an educational tool: its spreadsheet capabilities are limited. If you can live without the advanced functions and can tolerate the slow speed, The Cruncher is a good spreadsheet choice. If you want to teach a child spreadsheet basics, The Cruncher will do the job.—JOANNA PEARLSTEIN

# Should the New MiniCad 5 be your CAD Program?

# Take the Quiz.

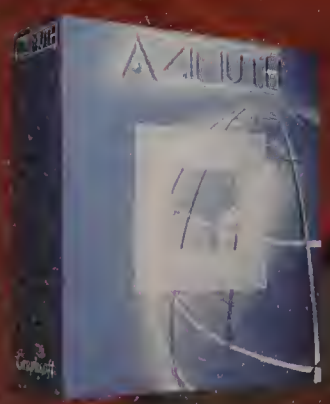
- I want a full-featured, proven market leader which can handle any job: 2D, 3D, cost estimation and client presentations.
- I want a program that runs on both the 68K-based Macintosh and the Power Macintosh. At no extra charge!
- I want a CAD program that is tailored to my needs, with specialized tools for architecture, mechanical engineering and design.
- I want an expandable CAD program which can be customized for specific solutions easily and inexpensively.
- I don't want to spend a lot for training or experience an enormous learning curve.
- I want an established company with constant R&D funding, so that my investment stays safe.

Accelerated for Power Macintosh

**3 Free Application Specific Modules**
Mechanical, Architectural, & Advanced Design

MiniCad 5 offers all of the above and more. The award-winning software has been hailed as the "features champion" by Macworld Magazine (March, 1993). Further, Graphsoft is dedicated to a progressive investment in CAD R&D. Graphsoft customers stay more productive than their competitors because Graphsoft supports both the latest technology and evolving user needs. MiniCad has long been the price/performance leader in Macintosh CAD. Don't be steered away from MiniCad by VARS who want you to buy high-priced CAD products that are hard to learn and only do a few things well. The VARS won't tell you that MiniCad 5 ships with a multi-media training CD, or that you receive 18 months of free technical support with Graphsoft products or upgrades. In short, MiniCad keeps more of your money in your pocket. Buy MiniCad 5 and save!

MiniCad 5 also includes: speed increases up to 100% even on 68K-based Macintoshes, a Claris CAD conversion program including a $495 upgrade price, a Claris CAD translator, and a helpful conversion guide, translators for importing and exporting to the other major CAD products, an upcoming Windows version, multi-media training CD 18 months of free technical support and a no-hassles 30-day money-back guarantee through authorized dealers. Contact Graphsoft today for detailed literature. To order immediately, call MacWarehouse, MacConnection, or your local dealer. Demo: $19.00Buy MiniCad 5 and save!



Also from...

Diehl Graphsoft Inc.

Graphsoft

**Azimuth**
The ultimate map creation tool, including nine cartographic projections and more! Used by US News & World Report. 4 mice

**Blueprint**
Full-featured 2D drafting. Experience ease of use, high precision and an affordable price. 4 mice. MacWorld Editor's Choice!

10270 Old Columbia Road, Suite 100, Columbia Maryland 21046 Ph:410-290-5114 Fax: 410-290-8050

Power Macintosh is a trademark of Apple Computer Inc. MiniCad, Blueprint, and Azimuth are trademarks of Diehl Graphsoft, Inc.
Claris CAD is a trademark of Claris Corp.

**Circle 46 on reader service card**

# PopupFolder

**Finder Utility**

**PROS:** Simple and intuitive; provides easy access to files and data. **CONS:** Can be sluggish on full drives. **COMPANY:** Inline Software (203/435-4995). **LIST PRICE:** $59.95.

MW ★★★

REMEMBER WHEN YOU FIRST GOT your Mac? The hard drive seemed a vast, open expanse you couldn't wait to fill with the latest software and your great American novel. By now, though, you've probably spent far too much time managing that territory—moving files around and rummaging through folders in search of documents.

Hierarchical menu utilities, such as Now Software's WYSIWYG Menus, Inline Software's HAM, and Kiwi Software's Kiwi Power Menus, all take a similar approach to the file-management challenge. Rather than make you open a dozen windows to find that control panel or document buried deep in your drive, hierarchical menus enable you to put frequently used folders, subfolders, and aliases in the Apple menu and then open them using simple pop-up menus. But these utilities limit you to the folders and applications you've had the foresight to put into the Apple Menu Items folder. If you're already that organized, maybe you don't need hierarchical menus to begin with.

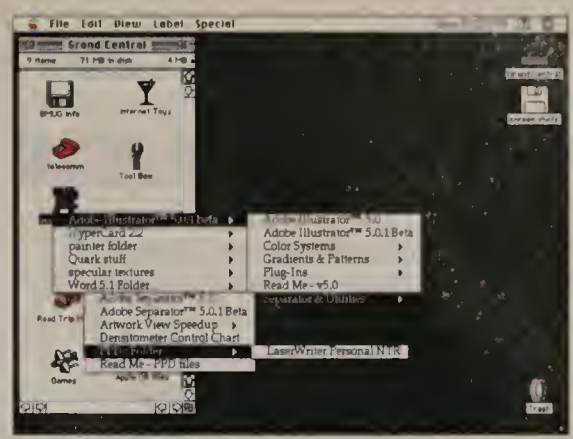
Inline Software's PopupFolder goes a step further by giving you hierarchical access to all the folders on your Mac. By clicking and holding on the icon of any folder, mounted volume, or floppy disk you instruct PopupFolder to search that item (up to five folders deep), giving you easy access to documents and applications all over your drive.

PopupFolder is primarily a Finder enhancement, but it also operates within applications, so you can use hierarchical pop-up menus to save and open files. Best of all, filing existing documents in folders becomes a simple matter of grabbing the files you want to put away and then dragging them onto the appropriate icon. When the menus pop up, you just drag the files and drop them into any folder.

When it is readying pop-up menus for every folder, PopupFolder seems sluggish; the program hesitates slightly over each icon while it scans your Mac's contents. Changing the mouse's double-click speed can help, but if many subfolders are nested on your drive, the slowdown can be a trifle annoying.

PopupFolder is easy to install—just drop the control panel into the System Folder and restart your Mac. But be aware that you may need to disable certain extensions when you restart the first time after installation. PopupFolder's registration dialog box wants to be the first item that launches, and if you are running start-up extensions such as E-mail or virus-protection software, PopupFolder can cause a crash when you restart.

For the most part, PopupFolder is so handy and intuitive to use, you wonder why it isn't built into the Mac's system software. For those of us with hard drives full of folders packed within folders, it's a welcome improvement to Finder navigation.
—MATTHEW HAWN




**Changing the Way You Use Your Mac** Use PopupFolder to get to those deep, dark, hard-to-reach corners of your hard drive.

# DateView 1.0.1

**Calendar/To-Do Manager**

**PROS:** Easy to learn; integrates with InTouch contact manager. **CONS:** Can't see to-do's in grid view. **COMPANY:** Advanced Software (408/733-0745). **LIST PRICE:** $99.95.

MW ★★★

WITH DATEVIEW, ADVANCED SOFTware is aiming at personal-calendar users who are willing to sacrifice some features to get simplicity and speed. DateView loads its files completely into RAM, so it's a good choice for PowerBook users—since it won't spin up the hard disk, it saves battery power. DateView is a single-user product; if you need to share your calendars with other users, then Now Software's Now Up-to-Date or Aldus's DateBook Pro are better choices, as both are networkable and multiuser programs.

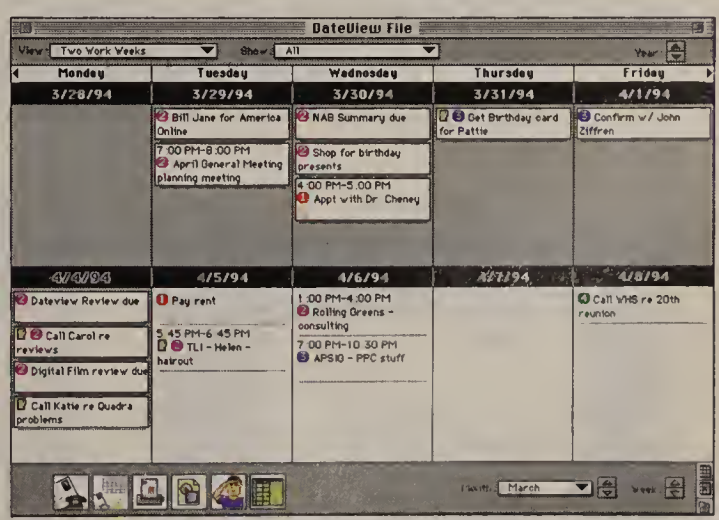
DateView has two types of multiday display modes. The list display shows events and to-do's sequentially (see "Schedule View"); the grid display shows days with lines marking times. Double-clicking on the header of any day zooms in, filling the screen with the day's agenda. You can customize the list or grid displays to view one or more weeks at a time.

The program allows four types of events: Block of Time, Point in Time, Date, and To-do. You can set to-do's to carry forward if not marked as completed. You can enter a series of recurring events in a single step and later reschedule one event in the sequence without affecting the others. DateView shows overlapping events side by side in the grid display.

It's easy to enter new events. If you're in the grid view, you just click and drag across the time the event will occupy; the Edit Event dialog box appears, and you set the type of event and fill in the event's description. You enter new events in list views by double-clicking on the day, which brings up the Edit Event dialog box.

One drawback is that to-do's appear only in list views; if you're in a grid view, you can't see to-do's at all. I found this so annoying that I invariably used only list views. I'd also like to see ⌘-*key* equivalents for the pop-up menu choices in the Edit Event dialog box; as it stands now, you must leave the keyboard and use the mouse to set the category, type, and priority of an event.

DateView can link events to Advanced Software's InTouch contact manager, even under System 6.0.X. Linking a DateView event to InTouch is very easy and takes only a few seconds. However, linking in the other direction, to a date from within InTouch, is considerably slower.




**Schedule View** This two-week DateView list view shows icons that denote events' priorities. Events with the head icon are linked to an InTouch contact record. Note that past days are grayed out.

If you have complex scheduling needs, then you'd be better served by a program with more features than DateView offers. But if you want a calendar program that takes only a few minutes to learn and can handle basic scheduling, DateView makes sense.—TOM NEGRINO

# DeBabelizer Lite 1.0

**Graphics-Conversion Software**

**PROS:** Supports a huge variety of file formats; simple interface; batch processing; supports many Photoshop plug-ins. **CONS:** Bitmapped formats only; some plug-ins don't work with it; images must fit in RAM. **COMPANY:** Equilibrium Technologies (415/332-4343). **LIST PRICE:** $129.

MW ★★★★

WHEN I FIRST STARTED USING DeBabelizer, I was astounded at its prowess in opening, converting, manipulating, and processing graphics files of almost any format—quickly and automatically (see *Reviews*, November 1993). Its $299 price tag placed it out of the reach of people who only occasionally need graphics conversion, however, and its complex interface was daunting for casual users.

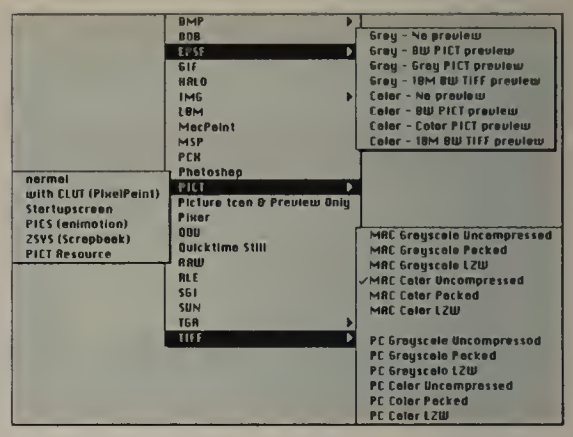
Equilibrium Technologies addresses both of these issues with DeBabelizer Lite—a version of the original program with a much narrower range of capabilities, a $129 price tag, and an interface that any Macintosh user can navigate easily.

At its most basic, DeBabelizer Lite is simply a program for converting graphics files from one format to another. Gone are all the esoteric options for dithering, resizing and resampling, scripting multiple operations, remapping color palettes, and the like. DeBabelizer Lite opens graphics files in one format and saves them in another.

You can convert individual files, or instruct the program to go through a whole folder and convert every image in the folder. An ingenious set of options lets you rename the resulting files sensibly.

Although there's a lot less to DeBabelizer Lite than its older sibling, not all of the controls are gone. There are options for saving in various flavors of key formats (color/gray scale, and compressed/uncompressed TIFF, for instance) and for changing the number of colors in an image. And you can choose from a few common Mac and Windows color palettes. You can also change the image's aspect ratio from DOS PC to Mac or vice versa—avoiding the squashed or stretched look that commonly results from moving screen shots between platforms.

Many Photoshop-compatible plug-ins work within DeBabelizer Lite, including filters and acquire and export modules. The program can even run a filter on a batch of images in a folder as each image is being translated. Unfortunately, many plug-ins that come with Photoshop only work with Photoshop (for example, the sharpening filters and the JPEG Export module).




**On the Menu** Many graphics professionals will find that DeBabelizer Lite's selection of graphics file formats offers all that their images require and more.

DeBabelizer Lite's only other major failing is its use of RAM for image processing. If an image doesn't fit in the program's allocated memory partition, you can't use DeBabelizer Lite to convert it. This is far from fatal, but it's worth considering if you're short on RAM and don't want to resort to the sluggishness of virtual memory.

DeBabelizer Lite is a terrific graphics utility, offering a choice selection of its forebear's capabilities at a nice, slim price.

—STEVE ROTH

If you want to see a full 81/2"x11" spending a lot of money, only

*Typical 17" monitor*
$1,100

*Portrait/15 Pivot*
$799

*Typical 20" monitor*
$2,100

# TimeSquare 1.0

**Scheduling Program**

**PROS:** Fast; flexible viewing options. **CONS:** Labels cannot be grouped; no multiday events; limited error notification when importing data. **COMPANY:** Team Building Technologies (514/278-3010). **LIST PRICE:** $149 for two users.

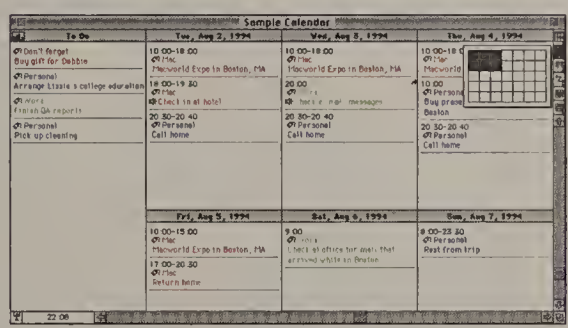
MW ★★★

IF YOUR PAPER ORGANIZER IS JAM-packed, then it's time to consider a computer-based scheduler like TimeSquare. Unlike programs that restrict you to viewing single days, weeks, or months, TimeSquare lets you decide exactly how many days to display. You can also specify whether the calendar scrolls forward or backward in weekly or daily increments. (TimeSquare's use of both the horizontal and vertical scrolls bars can be confusing at first, but it soon becomes second nature.) A handy feature lets you jump directly to the current day with a single click.

TimeSquare supports two types of events: to-do's, which aren't associated with any date or time, and timed activities, which are. You can set timed activities to carry forward on a daily basis until they're marked as completed. Unfortunately, you can't schedule activities that span several days. TimeSquare does support recurring events, but not as flexibly as other programs.

TimeSquare's alarm extension can remind you about timed events up to 999 days in advance, even if the application isn't running. When a pop-up alarm appears, you can clear it permanently or indicate that you want to be notified again up to 60 days later. If you don't respond in 1 minute, the alarm disappears, only to reappear in 5 minutes. You can't snooze an alarm without using the mouse, however.

TimeSquare lets you categorize activities by assigning labels to them. You can define up to 30 different labels, each with its own color. Since events appear in the color of their label, it's an easy way to pick out related events in a busy schedule. The only missing feature is the ability to group labels into sets as you can with Now Up-to-Date. (Now Up-to-Date's sets make it easy to view all related categories or labels, such as all personal activities.)




**Day by Day** TimeSquare sports a flexible calendar that lets you display up to 35 consecutive days. Undated to-do's appear in the list on the left.

TimeSquare supports multiple users by making extensive use of System 7's publish and subscribe. People on a network can view—but not alter—activities from another calendar by subscribing to a published edition that includes all of the events assigned to any label in the original file. If two people need to modify events in a calendar, however, they must have read-write access to a common calendar file.

For those rare times when you're away from your Mac, TimeSquare lets you print your schedule in a variety of formats. TimeSquare also lets you import and export calendars as either tab- or comma-delimited files. (If you try to import an event with a description field longer than 255 characters, the import process terminates without telling you why.) TimeSquare's manual is clearly written. Finally, technical support is friendly, if not toll-free.

All in all, I was quite impressed with the first release of TimeSquare: it's fast and builds on the strong points of its predecessor, AgentDA. With a few changes, Team Building Technologies could have a winner.—FRANKLIN N. TESSLER


# page without scrolling, shrinking, or the Portrait/15 Pivot makes sense.

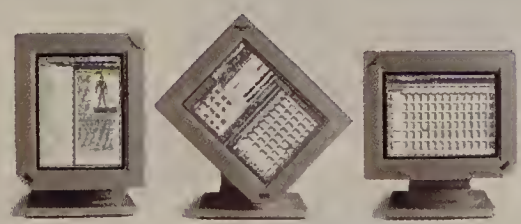
Let's face it. A monitor is only as good as its ability to show you a readable page of text.

And since you're reading this ad, you've probably run out of patience with the standard landscape monitor you're currently using – the one that forces you to constantly scroll up and down. Or shrink everything to tiny, unreadable page previews.

You *could* upgrade to a 16" or 17" landscape monitor. But even a 17 incher only shows you about 65% of a full page. So you'd still end up scrolling. Or shrinking.

A fancy 20" model would be more than enough to do the job. Unfortunately, it would also break the bank.

Which leaves the Portrait/15 Pivot, the only affordable, full-color portrait monitor that lets you see a whole page of perfectly readable text. On a Macintosh,® a Power Mac, or in Windows.™



*Only the Portrait/15 Pivot gives you the best of both worlds – portrait and landscape – in one affordable monitor.*

If the Portrait/15 Pivot looks like a great value, you haven't seen the half of it.

That's because buying a Portrait/15 Pivot is like getting two multi-frequency monitors for the price of one.

All you to do is reach up, grab the corner, rotate, and your portrait monitor instantly becomes a *landscape* monitor – no switches to set, no cables to change.

Portrait or landscape, you'll appreciate Macintosh resolutions up to 832 x 624 (up to 1024 x 768 in Windows), flicker-free refresh rates of 75 Hz and the sharp, clear images that only .28 mm dot pitch can give you.

Just what you'd expect from a monitor that combines the best of Radius® and Portrait Display Labs™ technology.

For an impressive list of features and specs, including our 30-day money-back guarantee, call 1-800-858-7744 Ext. 73.

It's the only sensible thing to do.

Portrait Display Labs radius

POWER MAC COMPATIBLE!

*The Portrait/15 Pivot is compatible with Macintosh on-board video and popular Windows graphics cards.*

**Circle 89 on reader service card**

# Billions And Billions And Billions And Billions...of Colors.

## Introducing the ScanMaker® III, the first 36-bit, single-pass, color flatbed scanner that's also the best value in the cosmos.

The ScanMaker III's 36-bit color scanning capability allows it to capture an astronomical 68 billion colors. It has an optical density that reaches 3.4, unprecedented for a flatbed scanner, which results in a vastly expanded dynamic range. What all this means is, that your scanned images will have smoother color gradations, denser color values and substantially increased detail in shadow and highlight areas.

Performing like scanners priced somewhere in the stratosphere, the ScanMaker III's scans are so sharp, you will actually reduce the amount of time spent in post-scanning software to sharpen images. And its optical resolution of 600 x 1200 dpi (enhanced through software to 2400 x 2400 dpi) is great for enlarging small originals.

*ScanMaker III shown with optional Transparent Media Adapter for scanning transparencies up to 8" x 10".*

For accurate scanned color, DCR™ (Dynamic Color Rendition), Microtek's award-winning color calibration/correction system calibrates the ScanMaker III to a photographic industry-accepted calibration target creating a custom profile of your specific scanner. This ensures the most accurate color possible as you scan an image, so you spend a lot less time adjusting the color of your scans to match your originals.

Windows users also get Microtek's ScanWizard™, a drag and drop application for instant image management, faxing and printing. The ScanMaker III also includes the full-version of Adobe Photoshop for complete image editing and color separations.

See why Microtek is the universally accepted leader in image quality. For more information about the ScanMaker III, DCR, ScanWizard, or for the name of your nearest authorized Microtek reseller, call **1-800-654-4160**.

**MICROTEK**

*Better Images Through Innovation.*

The following are trademarks or registered trademarks of their respective companies: Adobe Photoshop of Adobe Systems, Inc.; Windows of Microsoft Corporation, Microtek, ScanMaker, DCR, Dynamic Color Rendition, ScanWizard of Microtek International, Inc. All other trademarks or registered trademarks are the property of their respective holders. Specific software bundles are subject to change without notice. SMIIIEUV41594

**Circle 287 on reader service card**

# Icon Mania 1.0

**Icon-Editing Utility**

**PROS:** Simple interface; creates thumbnails from graphics files; good icon-editing tools. **CONS:** No text tool. **COMPANY:** Dubl-Click Software (818/888-2068). **LIST PRICE:** $69.95.

MW ★★★★

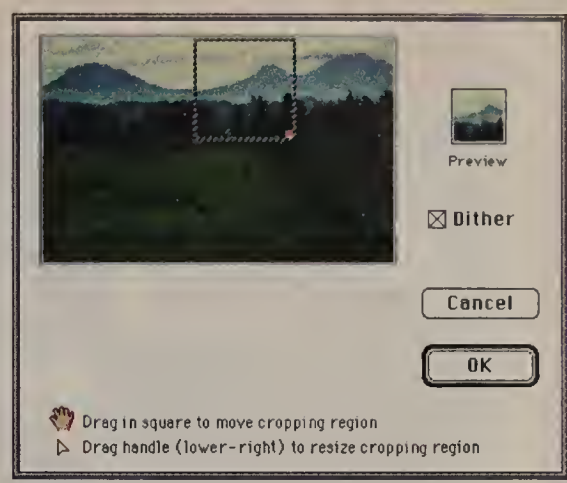
ICON MANIA IS A DELIGHTFUL ICON-editing utility that comes with terrific tools for building new icons, even if you have no artistic talent all all. Unlike some icon-editing programs, Icon Mania isn't a system extension or control panel; it's a small stand-alone application that makes editing batches of icons easy—and entertaining.

The program's main interface, consisting of three windows, is a model of clarity. The left window displays a library of custom icons; you can create your own libraries or dip into the 730 icons included with the program. The middle window shows the icons on any volumes currently mounted on your Mac. The window on the right is the pasteboard, a storage area where you can paste icons-in-progress or library items you access frequently. To apply an icon to a file, folder, or disk, you simply drag a custom icon—from either the library or pasteboard—onto the icon you want replaced.

The icons that come with the program are outstanding; the majority are colorful, sophisticated, and well designed. (The icons look fine in black and white but are spectacular in color.) You can go wild with icons of space creatures, animals, bugs, Elvis, Ronald Reagan, and the Marx brothers. On a more practical note, there are colorful 3-D versions of popular application icons and folders as well as a set of sharp-looking icons representing floppy disks, hard drives, and removables. Icon Mania also allows you to replace your default system icons with full-color, jazzed-up versions of folder, control panel, Trash Can, and alert icons.

But this isn't just an icon collection; it's an icon editor. Choosing the Edit command—or just double-clicking on an icon in the library or on the pasteboard—opens a window for modifying icons on a pixel-by-pixel basis. You can also create new icons from scratch. A row of Instant Tool buttons allows you to rotate, invert, and flip pieces of your icon designs with a single click. Still, a text tool would make it easier to add letters and numbers to icon designs.

Some of the program's icon-making commands are particularly noteworthy. First, the program lets you merge two different icons into a single new design using Paste Into Icon, a powerful command that enables you to take one icon and superimpose it within the boundaries of a second. Another outstanding feature is the Thumbnail command. Select a graphics file, choose Thumbnail, and Icon Mania builds a custom icon containing a thumbnail of the actual image contained in the file. The command produces great results and works with files in PICT, MacPaint, TIFF, GIF, PICS, EPS, and StartupScreen formats.




**Instant Thumbnails** Icon Mania can create thumbnails—this dialog box lets you choose the portion of the image you want in the custom icon.

Icon Mania won't make you more productive, and it won't make your Mac more powerful. But after seeing how vibrantly Icon Mania can transform a window full of boring, generic folders, you may just decide you can't live without it.—JOSEPH SCHORR

# PowerMerge 2.0

**File-Synchronization Software**

**PROS:** Better file- and conflict-handling; can compare and launch documents within PowerMerge; locates duplicate files; improved status information. **CONS:** Can't schedule synchronizations. **COMPANY:** Leader Technologies (714/757-1787). **LIST PRICE:** $129.

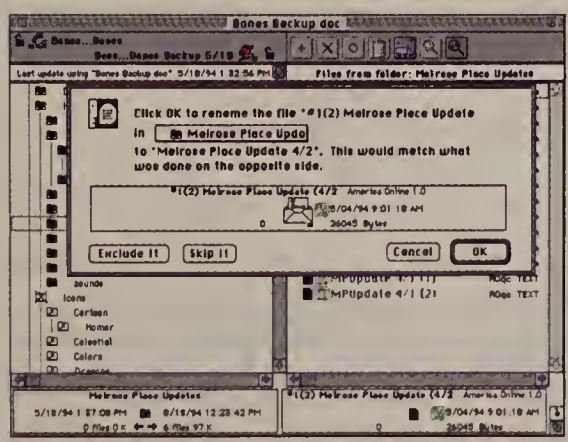
MW ★★★★

POWERMERGE IS ONE OF SEVERAL synchronization programs that help you keep individual files, folders, or entire volumes organized and up-to-date. PowerMerge 1.0.2 was a useful program (see *Reviews, Macworld*, April 1993). Version 2.0 adds important new features.

Here's a typical scenario. Suppose I decide to work at home. I open PowerMerge on my Mac at work, locate the files I want to work on, and have PowerMerge copy them to a floppy. At home, I copy the files onto my Mac. I finish my work and return to the office Monday morning, deadline met. Now I want to replace the files on my workplace Mac with the new files. PowerMerge can look at both the floppy disk and the hard drive on my workplace Mac and can replace the old versions of files with the new versions.

That's synchronization at its simplest. But sometimes I just can't remember which file is my working copy and which file is a different version, an archival copy, or ready for the Trash Can. What's a gal to do?

Each time you open PowerMerge, it presents the preview screen. From this screen you can open files you're not sure about (without leaving PowerMerge) and take a look. If you've modified both desktop and floppy versions of a file, PowerMerge can do a text comparison—either automatically or by using a third-party product like DocuComp—or PowerMerge can open both copies and let you eyeball them, line by line. You can also rename files, trash superfluous copies, as well as set PowerMerge to copy new files (or tell it not to copy a particular file anymore). To help identify files, a status box at the bottom of the preview screen lists file types and creation/modification dates, and also shows how you've set up PowerMerge to deal with each file. You can choose to have PowerMerge display apparent duplicates at the top of the preview screen.




**Conflict Resolution** During synchronization, PowerMerge notifies you if a file name has changed.

PowerMerge can also be used as a backup program. You can lock the working volume, making it a one-way synchronization. You can designate—in the preview screen—the working volume as a master volume; again, the synchronization is one-way, but PowerMerge makes the contents of the backup, or slave, volume mirror the master volume, so you end up with an exact duplicate of the working volume. Lastly, for maximum flexibility you can select the two volumes and tinker with the settings each time you want to back up, especially if you want to keep several versions of a backup file or retrieve files from the backup volume without a full restore.

PowerMerge is a powerful file-management tool. If you're using 1.0, or have never tried synchronization software, check out PowerMerge 2.0. I see a lot of software, so when I not only install but also continue to use a program over a year later, I know it's a hit.—SUZANNE COURTEAU

# COMPUTER DISCOUNT WAREHOUSE™

CDW® YOUR COMPLETE SOURCE FOR MACINTOSH SOFTWARE

**MacDeal$™** says: "Any order $200 or less ships for only **$2.99**!"

Call **CDW** today for all your Macintosh® computing needs!

**800-509-4CDW**

Authorized Catalog Reseller

## DeskWriter 560C Color Inkjet Printer

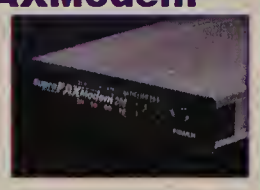
● 600 x 300 dpi with Resolution Enhancement ● 24-bit (16.7 million) color support ● 256 grayscale levels ● Up to 3 ppm print speed ● 3 year limited warranty ● 35 TrueType scalable fonts ● AppleTalk and serial interfaces ● Prints on plain or glossy paper, transparencies, and envelopes

ONLY! ..... **$569.75** CDW 39509

TOP SELLER

Supra Corporation®

## SupraFAXModem™ 144LC



✔ 14,400 bps data and fax
✔ LED status indicators
✔ Includes FAXcilitate™ 1.6, MicroPhone™ LT, CompuServe® software, and cables.

ONLY! ..... **$152.30** CDW 37346

NEC

PRICE DROP!

TRIPLE-SPIN TECHNOLOGY

## MultiSpin 3Xe CD-ROM Drive

◆ 195ms Access ◆ 450KB/sec Data Throughput ◆ 256KB Continuous-Flow Cache ◆ MPC Level 2, PhotoCD Multisession, and QuickTime Compliant ◆ Switchable SCSI-1/SCSI-2 Interface

ONLY! ... **$463.57** CDW 32243

### Adobe

Acrobat Exchange 1 user ..... 125.89
Dimensions ..... 119.55
Illustrator V5.5 + CD ..... 379.29
Photoshop V2.5.1 ..... 546.68
Photoshop V2.5.1 DLX CD ..... 615.94
Premiere V3.0 ..... 444.38
Premiere V3.0 DLX CD ..... 508.31
Streamline V3.0 ..... 127.87
Super ATM ..... 93.06
Type Basics ..... 119.98
Type Manager V3.6 ..... 39.86
TypeSet Value Pk ..... 38.76

## Adobe Illustrator V5.5

ONLY! **$379.29** CDW 42167

### Aldus

Datebook Pro V2.0 ..... 44.23
Fetch V1.2 ..... 182.77
Freehand V4.0 ..... 369.35
Gallery Effects Vol. 1 ..... 125.54
Home Publisher V1.0 ..... 44.53
IntelliDraw V2.0 ..... 41.18
Pagemaker V5.0 ..... 549.56
Persuasion V2.1 ..... 304.09
Pre-print V1.6 ..... 311.35
SuperCard V1.6 ..... 125.54
SuperPaint V3.5 ..... 44.92
Touchbase Pro V3.0 ..... 44.23

### Altsys

EPS Exchange V2.0 ..... 85.93
Fontographer ..... 248.84
Metamorphosis Pro V2.04 ..... 85.94

### Ares

Font Chameleon V1.0 ..... 172.53
Font Hopper ..... 39.24
Fontmonger V1.5 ..... 89.11

Aladdin SitCom ..... 63.82
Aladdin StuffIt Space Saver ..... 34.06
Avery MacLebel Pro ..... 45.89

### Broderbund

Automap Atlas ..... 55.56
Bannermania ..... 21.26
Carmen Sandiego/Time ..... 29.20
Carmen Sandiego/USA DLX ..... 39.24
Carmen Sandiego/World DLX ..... 39.24
Carmen Sandiego/World DLX CD-ROM ..... 53.85
MYST CD-ROM ..... 48.28
Petton Strikes Back ..... 12.28
Prince of Persia ..... 29.45
The Printshop Deluxe ..... 47.06
Typestyler V2.0 ..... 118.76

BestWare MYOB Accounting V4.0 ..... 99.54

### Caere

OmniPage Direct ..... 87.14
OmniPage Pro V3.0 ..... 299.65
OmniScan ..... 295.09

### Central Point

Anti Virus ..... 41.58
MacTools V3.0 ..... 86.50
Safe and Sound ..... 29.37

### Claris

Brush Strokes ..... 45.55
Brush Strokes Comp Upg ..... 71.21
ClarisWorks V2.1 ..... 185.26
FileMaker Pro V2.1 ..... 247.71
FileMaker Pro V2.1 Comp Upg ..... 109.98
Impect V1.0 ..... 136.29
MacDraw Pro V1.5 ..... 248.51
MacPeint V2.0 ..... 79.08
MacProject Pro V1.5 ..... 371.52
MacWrite Pro V1.0 ..... 95.19
MacWrite V1.1 ..... 82.49
Power to Go V2.0 ..... 26.21
Retreive It! ..... 26.21

### Connectix

Desktop Utilities ..... 55.72
Maxima V2.0 ..... 43.33
On the Road V1.0 ..... 55.72
PowerBook Utilities ..... 55.72
RAM Doubler ..... 55.05

Colorage Freedom of Press Classic ..... 79.59
CompuServe Membership Kit ..... 24.64
Corel Gellery V1.0 ..... 33.10
Corel SCSII ..... 65.44

### Dantz

Diskfit Direct V1.0 ..... 29.78
Diskfit Pro V1.1 ..... 69.60
Retrospect Remote V2.0 ..... 245.66
Retrospect V2.0 ..... 136.68

### Datawatch

Citadel w/Shredder ..... 59.07
ScreenLink V2.0 2 user ..... 59.07
Superset Utilities ..... 85.62
Virex V5.0 ..... 59.93

### Delrina

DelrineFax V1.5 ..... 79.62
Far Side Daily Planner ..... 38.59
Intermission Screen Svr ..... 26.30
Opus & Bill Screen Svr ..... 29.60

### Deneba

Artworks V1.0 ..... 98.49
Canvas Tool Packs ..... 34.51
Canvas V3.5 ..... 252.30
Ultra Paint V1.03 ..... 53.80

Dataviz MacLink+/PC Connection ..... 115.43
DCA Crosstalk ..... 113.90

### Electronic Arts

Chuck Yeager's Air Combat ..... 35.66
Cyberplasm Formula CD ..... 32.94
Deluxe Music V3.0 CD ..... 86.52
PGA Tour Golf CD ..... 35.66
Populous CD ..... 29.40
Total Distortion CD ..... 78.12
V for Victory II ..... 41.60
Vampires Coffin CD ..... 39.19

### Entertainment

Berkeley After Dark V2.0 ..... 28.17
Berkeley Disney Screen Svr ..... 27.81
Berkeley More After Dark ..... 23.88
Berkeley More After Dark ..... 23.87
Berkeley Star Trek Screen Svr ..... 28.45
Comptons King James Bible ..... 16.57
Comptons Movies ..... 25.31
Comptons Tropical Rainforest ..... 25.30
Comptons Wild Places ..... 25.30
LucasArts Indiana Jones Last Crusade ..... 19.95
LucasArts Loom ..... 18.00
LucasArts Secret of Monkey Island ..... 21.00
Maxis A-Train w/Contruct Set ..... 29.14
Maxis DoodleMation V1.0 ..... 18.32
Maxis EL Fish ..... 29.13
Maxis Robosport ..... 23.28
Maxis SimAnt ..... 29.12
Maxis SimCity 2000 ..... 39.82
Maxis SimCity Classic ..... 23.28
Maxis SimEarth ..... 29.12
Microprose Civilization ..... 44.47
Microprose Railroad Tycoon ..... 19.78
Paramount Jump Raven CD ..... 38.98
Paramount Lunicus CD ..... 38.94
Paramount Movie Select CD ..... 34.19
Paramount Rock, Rap and Roll CD ..... 38.98

NEW!

## QuarkXPress V3.3

ONLY! **$596.91** CDW 40554

Psygnosis Lemmings ..... 34.21
Psygnosis Lemmings II ..... 34.21
Psygnosis More Lemmings ..... 28.47
Velocity Dev Spectre VR ..... 34.19
Velocity Development Spectre VR CD ..... 38.98
Virgin 7th Guest CD ..... 49.11

### Fractal Design

Colorstudio V1.5 ..... 443.61
Painter V2.0 ..... 243.45
Painter/X2 ..... 84.33
Sketcher V1.0 ..... 48.90

### Frame Technology

Framemaker V4.0 ..... 559.75
Framereader ..... 74.51

Farallon Timbuktu V5.0 ..... 105.55
Freesoft White Knight 11 ..... 83.52
Golden Triangle TimesTwo ..... 81.72
Gryphon Morph V2.0 ..... 139.60
Hayes Smartcom III V3.4 ..... 79.58
HSC Kel's Powertools V2.0 ..... 98.59

### Inline

Cogito V1.0 ..... 34.19
Deliverance ..... 28.47
Firefall ..... 28.47
Icon 7 ..... 44.53
INITpicker V3.0 ..... 38.98
Spin Doctor ..... 34.19
Super Maze Wars ..... 28.34

### Insignia

Access PC V3.0 ..... 79.92
RapidCD V1.0 ..... 45.20
RapidTrack V1.0 ..... 45.20
Soft PC V3.0 ..... 99.10
Soft PC with Windows ..... 302.25
Solutions Pro V3.1 ..... 179.98

### Interplay

Battlechess ..... 17.91
Battlechess Enhanced ..... 44.56
Checkmate ..... 31.33
Out of this World ..... 34.27
Peter Gabriel XPLORA 1 ..... 47.06
Star Trek 25th Anniversary ..... 34.19

IMSI TurboCAD V1.0 ..... 75.69
Informix Wingz V1.1 ..... 241.66
Intuit Quicken V4.0 ..... 42.93

### Kent Marsh

Cryptomatic V1.0 ..... 55.15
Folderbolt V1.02 ..... 69.27
Folderbolt/Nightwatch bundle ..... 119.91
Quick Lock V2.1 ..... 17.91

### Lotus

1-2-3 V1.1 ..... 276.77
1-2-3 V1.1 Comp Upg ..... 98.47
1-2-3 V1.1 Server ..... 332.35
1-2-3 V1.1 Server Upg ..... 98.56

Light Source OFOTO V2.03 ..... 189.92

### Macromind

Macromedie Action Bundle ..... 269.46
Macromedia Director V3.1 ..... 669.24
Macromedia Director V3.1 Upg ..... 352.82
SoundEdit Pro ..... 135.18
Swivel 3D Professional ..... 278.72

XTRA VALUE

## Microsoft FoxPro V2.5

ONLY! **$92.13** CDW 37657

### Microsoft

Cinemania 1994 ..... 51.76
Excel V4.0 ..... 298.78
Excel V4.0 Upg ..... 114.54
File V2.0 ..... 123.01
Flight Simulator V4.0 ..... 43.31
Foxpro Professional Upg V2.5 ..... 265.58
FoxPro V2.5 ..... 92.13
Office V3.0 ..... 453.36
Office V3.0 CD ..... 442.80
PowerPoint V3.0 ..... 299.71
PowerPoint V3.0 Comp Upg ..... 115.98
PowerPoint V3.0 Vers Upg ..... 102.76
Project V3.0 ..... 418.86
Project V3.0 Comp Upg ..... 134.82
Project V3.0 Vers Upg ..... 121.49
Word V5.1 ..... 299.71
Word V5.1 Comp Upg ..... 113.41
Word V5.1 Vers Upg ..... 99.95
Works V3.0 ..... 151.85

No Hands Common Ground V1.0 ..... 89.43
Now Software Now Up-to-Date V2.1 ..... 59.49
Now Software Now Utilities V4.0.1 ..... 77.41
Disk Manager ..... 31.29
QuarkXpress V3.3 ..... 596.91

### Ray Dream

AddDepth V1.0 ..... 115.01
Designer V3.0 ..... 223.59
JAG II ..... 85.27

### Sierra On-line

Freddy Pharkes ..... 23.77
Hoyle Classic ..... 28.47
Hoyle II ..... 28.45
Japenese Alive CD ..... 102.62
Kings Quest V ..... 38.97
Kings Quest VI ..... 44.53
Leisure Suit Larry 1 ..... 17.91
Leisure Suit Larry 5 ..... 23.89
Police Quest 3 ..... 38.97
Police Quest 4 ..... 38.98
Space Quest IV ..... 23.01

### Spectrum Holobyte

Falcon V2.2 ..... 35.28
Iron Helix CD ..... 56.89
Super Tetris ..... 29.78
Tetris ..... 24.07
Wordtris ..... 29.78

### Symantec

ACT! V1.1 ..... 156.77
Autodoubler V2.0 ..... 58.38
Disklock V2.1 ..... 119.22
Greetworks V2.0 ..... 84.28
More V3.1 ..... 248.45
Norton PowerBook Essentials V1.1 ..... 83.72
Norton Utilities V2.0 ..... 93.62
PYRO! V4.1 ..... 27.33
SAM AntiVirus V3.5 ..... 64.22
Suitcase V2.1 ..... 49.74
Superdoubler V1.0 ..... 69.74

Software Ventures MicroPhone Pro ..... 132.08
T/Maker Incredible Image Pak ..... 79.74

### WordPerfect

LetterPerfect V2.1 ..... 59.50
WordPerfect V3.0 ..... 273.87
WordPerfect V3.0 Comp Upg ..... 75.81
WordPerfect V3.0 Vers Upg ..... 47.34
Works V1.2 ..... 144.72
Works V1.2 Upg ..... 79.71

**If You Find a Better Price, Call CDW® Before You Buy (800) 509-4CDW**

NASDAQ

BUY WITH CONFIDENCE
CDW® IS A NASDAQ TRADED COMPANY
TICKER SYMBOL CDWC
D & B Rated 4A1
Duns 10-762-7952

No Surcharge For Credit Cards

VISA DISCOVER MasterCard

Credit Card charges are not submitted until time of shipment. Freight is calculated as the carrier's actual freight charge plus insurance and packaging material. The cost of insurance is 0.35% (0.0035) of the order total. Packaging materials will not exceed $4.00 per 1 package order or $6.00 per multi-package shipment. For your protection we ship only to your verified billing address. Non-defective returns subject to restocking fee. Allow 10 business days for shipping when paying by personal check. Software, chips and other electronic components are not returnable. All pricing subject to change. ™ - Trademarks of all companies listed in this ad.

**CDW® HOURS**
Sales 7:00-9:00 CDT Mon-Fri.
9:00-5:00 CDT Sat.
Tech Support for Customers
8:00-7:00 CDT Mon-Fri.
9:00-5:00 CDT Sat.

**Free technical support for CDW customers: 800-383-4239**

# COMPUTER DISCOUNT WAREHOUSE™

CDW

## Monitors

E-MACHINES

| | |
|---|---|
| T16II 16" color | 1167.84 |
| E20 20" color | 1598.57 |
| T20 20" color | 2426.02 |

NEC

| | |
|---|---|
| 3V 15" flat sq | 467.49 |
| 3FGe 15" flat sq | 557.17 |
| 4FGe 15" flat sq | 617.19 |
| 5FGe 17" flat sq | 998.50 |
| 5FGp 17" flat sq | 1097.21 |
| 6FGp 21" flat sq | 1997.00 |

MAGNAVOX

| | |
|---|---|
| CM2080 14" .28mm | 249.80 |
| 20CM64 20" .31mm | 999.00 |

SONY

| | |
|---|---|
| 1730 17" trinitron | 967.24 |
| 17se1 17" GDM-series trinitron | 1119.89 |

**Radius**

| | |
|---|---|
| Monochrome 15" Pivot | 562.65 |
| Precisioncolor 15" Pivot | 816.31 |
| Precisioncolor 17" full pg | 1079.12 |
| 20GS 20" mono duel pg | 796.88 |
| Precisioncolor 20" dual pg | 1636.19 |
| Intellicolor 20" | 1878.82 |

RasterOps

| | |
|---|---|
| Sweet 16" color full pg | 932.66 |
| 21" mono dual pg | 1088.78 |
| 20/20 20" color full pg | 1496.82 |
| 21" color dual pg | 2308.24 |
| 20T 20" color .30mm | 1957.57 |

SUPERMAC

| | |
|---|---|
| Supermetch 17T 17" color | 1042.93 |
| Pletinum 20" mono full pg | 836.98 |
| Supermatch 20+ 20" color | 1639.89 |
| Supermatch 20TXL 20" color | 2109.71 |

## Graphics/Video Boards

E-MACHINES

| | |
|---|---|
| Futura SX | 299.00 |
| Futura II LX | 762.11 |
| Futura II Ethernet upg | 254.20 |
| Uttura LX | 1086.01 |
| Simply TV | 372.87 |
| Powerlink Presentor | 416.05 |

**Radius**

| | |
|---|---|
| Precisioncolor 8XJ 8-bit | 456.42 |
| Precisioncolor Pro 24XP | 445.28 |
| Precisioncolor Pro 24X | 1387.36 |
| Photobooster 040/66 | 765.26 |
| Powerview for PowerBook/Classic | 475.61 |
| VideoVision | 1512.59 |

RasterOps

| | |
|---|---|
| 8XL 8-bit 1MB | 446.71 |
| 8XLI 8-bit 1MB | 812.08 |
| 24MX 24-bit 2MB | 487.40 |
| 24STV 24-bit | 747.14 |
| 24XLI 24-bit 3MB | 1613.55 |
| PaintBoard 8LI 8-bit 1MB | 316.72 |
| PaintBoard Lightning 24-bit 3MB | 762.72 |
| PaintBoard Turbo 24-bit 3MB 7" | 1122.83 |
| PaintBoard Turbo 24-bit 3MB XL | 1108.83 |
| PhotoPro | 499.83 |
| Moviepak2 | 1527.77 |
| Mediatime | 1492.88 |
| CorrectColor Calibrator | 952.89 |

SUPERMAC

| | |
|---|---|
| Spectrum/8 Series III | 381.38 |
| Spectrum/24 Series IV | 762.11 |
| Thunder/8 | 1094.71 |
| Thunder/24 | 1676.82 |
| Thunder 24 DSP upg | 508.28 |
| Thunder II | 2001.54 |
| Thunderstorm for Photoshop | 423.84 |
| Supermatch Calibrator | 339.71 |
| Videospigot NuBus | 362.39 |
| DigitalFilm | 2816.04 |

## Networking

ASANTÉ

| | |
|---|---|
| 10THUB 12 port 10BT +AUI/BNC | 456.01 |
| 10THUB 8 port 10BT +BNC | 215.98 |
| AH1012 12 port 10BT +RJ21//BNC/AUI | 819.90 |
| SNMP Module-AH1012 | 259.15 |
| AH1709 12 port 10BT RJ21/BNC/AUI w/bridge | 2055.71 |
| Asantelite LC-10T 10BT | 101.72 |
| Asantelite LC-TN Coax | 108.88 |
| Asantelite NB-10T 10BT | 108.88 |
| Asantelite NB-TN Coax | 111.92 |
| AsantePrint 2001 APL Bridge RJ45/AUI | 326.89 |
| AsantePrint 1002 APL Bridge AUI/BNC | 329.61 |
| AsantePrint APL Bridge RJ45/AUI | 319.42 |
| FN10TA Transceiver RJ45/AUI | 54.28 |
| FNIISITN Coax w/transceiver | 226.67 |
| FNIISITNMC 10BT w/transceiver | 317.61 |
| FNIITN Coax w/transceiver | 194.39 |
| FNTKA Transceiver AUI/AUI | 64.54 |
| FNTNA Transceiver BNC/AUI | 55.68 |
| MacLCTNIII Coax | 149.17 |
| MC+30IE64 Coax | 148.98 |
| MC+30IET64 10BT | 149.17 |
| MC+LCIII Combo | 174.89 |
| MC+SEE Coax | 149.17 |
| MC+SEET 10BT | 149.17 |
| MC3IISI Combo | 194.39 |
| MC3NB Combo | 186.04 |
| MC3SE Combo | 194.39 |
| McLC10TIII 10BT | 149.17 |
| MCLC10TMCII 10BT w/FPU | 239.67 |
| Mini EN/SC SCSI Combo | 294.59 |
| Mini EN/SC10T SCSI 10BT | 233.16 |
| EN/SC SCSI Combo | 298.12 |
| MR/LC Token Ring 16/4 | 388.67 |
| MR/SE Token Ring 16/4 | 388.67 |
| AsanteView V2.2 | 215.99 |

Dayna

| | |
|---|---|
| Network Vital Signs | 237.33 |
| Netscope System bundle | 592.40 |
| SefeDeposit V1.3 | 65.62 |
| SafeDeposit for AppleShere Servers | 242.97 |
| Daynaport E/LC Coex | 108.67 |
| Dayneport E/LC-T 10BT | 89.36 |
| Dayneport E/LC-A AUI | 144.76 |
| Dayneport E/LC-M Combo | 154.41 |
| Dayneport E/Z Combo | 239.57 |
| Daynaport SCSI/Link Coax | 248.97 |
| Daynaport SCSI/Link-T 10BT | 248.97 |
| Daynaport SCSI/Link-3 Combo | 292.02 |
| Daynaport SCSI/Link PB Coax | 268.22 |
| Daynaport SCSI/Link PB-T 10BT | 268.22 |
| Daynaport SCSI/Link PB-3 Combo | 299.24 |
| Etherprint APL Bridge BNC/AUI | 329.58 |
| Etherprint-T APL Bridge RJ45/AUI | 321.87 |
| Etherprint-3 APL Bridge BNC/RJ45/AUI | 354.01 |

**FARALLON**

| | |
|---|---|
| EtherWave AAUI Transceiver 10BT | 98.63 |
| EtherWave AUI Transceiver 10BT | 101.09 |
| EtherWave LC Adapt. 10BT | 288.49 |
| EtherWave LC-F Adapt. w/FPU 10BT | 179.21 |
| EtherWave NuBus Adapt. 10BT | 178.20 |
| EtherWave Adept. (PwrBk, Classic) 10BT | 291.25 |
| EtherWave Newton Adapt. 10BT | 291.50 |
| EtherWave Printer Adapt. 10BT | 291.35 |
| EtherMac LC-10T 10BT | 101.25 |
| EtherMac LC-10TF 10BT w/FPU | 241.59 |
| EtherMac LC-C Combo | 174.43 |
| EtherMac LC-CF Combo w/FPU | 279.67 |
| EtherMac LC-TN Coax | 109.10 |
| EtherMac LC-TNF Coax w/FPU | 241.59 |
| EtherMac SCSI-TN (Classic, Mac+) Coax | 265.04 |
| EtherMac SCSI-TN (PowerBook) Coax | 275.92 |
| EtherMac SCSI-TP (Classic, Mac+) 10BT | 263.73 |
| EtherMac SCSI-TP (PowerBook) 10BT | 279.67 |
| EtherMac SE-C Combo | 148.20 |
| Ether10-T transceiver RJ45/AAUi | 54.51 |
| Ether10-T transceiver RJ45/AUI | 66.71 |
| LocalPath V1.0 8 user | 132.03 |
| PhoneNET Connector DIN-8 | 28.12 |
| PhoneNET Connector DIN-8 10pk | 194.86 |

## Communications/Modems

**Global Village**

| | |
|---|---|
| PowerPort Bronze 2400 Int. | 87.55 |
| PowerPort Silver 9600 Int. | 249.90 |
| PowerPort Gold 14.4K Int. | 272.34 |
| PowerPort Mercury 19.2K Int. | 314.37 |
| TelePort Bronze 2400 Ext. | 89.84 |
| TelePort Silver 9600 Ext. | 219.96 |
| TelePort Gold 14.4K Ext. | 219.97 |
| Teleport Mercury 19.2K Ext. | 273.77 |
| GlobelFax Duo software | 75.00 |

Hayes

| | |
|---|---|
| Mac ACCURA 2400 | 69.28 |
| Mac ACCURA 9600/FAX96 | 148.91 |
| Mac ACCURA 14.4/FAX14.4 | 157.95 |
| Mac OPTIMA 2400/FAX96 | 124.10 |
| Mac OPTIMA 9600/FAX96 | 349.13 |
| Mac OPTIMA 14.4/14.4 Pocket | 289.27 |

PRACTICAL PERIPHERALS

| | |
|---|---|
| Mac 14.4/14.4 Pocket | 299.33 |
| Mac 14.4/14.4 FXSA w/LCD | 386.25 |

**Supra**

| | |
|---|---|
| Mac 14.4/14.4 w/LCD | 207.74 |
| Mac LC 14.4/14.4 | 152.30 |
| Mac PowerBook 14.4/14.4 Int. | 204.92 |

U.S. Robotics

| | |
|---|---|
| Mac Sportster 14.4/14.4 | 149.80 |
| Mac WorldPort 14.4 Pocket | 239.79 |

## Storage Systems

FWB

| | |
|---|---|
| FWB Hard Disk ToolKit | 125.62 |
| Hard Disk ToolKit Personal V1.5 | 49.69 |
| PocketHammer 170MB | 449.03 |
| PocketHammer 240MB | 525.24 |
| PocketHammer 530FMF 530MB | 972.62 |
| PocketHammer 1000FMF 1.0GB | 1119.51 |
| PocketHammer 1600FMF 1.6GB | 1751.55 |
| PocketHammer 2100FMF 2.1GB | 2268.03 |
| HammerPB 210MB PowerBook Int. | 599.85 |
| HammerPB 340MB PowerBook Int. | 637.41 |
| Hammer 2000FMF 2.0GB | 2579.54 |
| Hammer 2100FMF 2.0GB | 2355.48 |
| Hammer 2800FMF 2.8GB | 3149.86 |
| HammerDisk 44MB Syquest | 449.83 |
| HammerDisk 88MB Syquest | 599.85 |
| HammerDisk 105MB Syquest | 469.01 |
| HammerDisk 130MB Optical | 1083.92 |
| HammerDisk 600MB Optical | 2409.15 |
| HammerTape 525MB External | 915.80 |
| SCSI JackHammer | 598.37 |
| SledgeHammer 2000FMF 2.0GB | 2239.72 |
| Hammer external enclosure | 149.00 |

I-MEGA

| | |
|---|---|
| MacFloptical 21MB | 449.88 |
| MacTransportable Bernoulli 90MB | 333.42 |
| MacTransportable Bernoulli 150MB | 468.00 |

**Micronet**

| | |
|---|---|
| C Pack 80MB | 397.80 |
| C Pack 120MB | 386.46 |
| C Pack 240MB | 475.18 |
| C Pack 155MB Tape Drive | 729.87 |
| C Pack 600MB Tape Drive | 911.12 |
| SS-240 240MB Ext. | 492.99 |
| SS-313 323MB Ext. | 1069.86 |
| SS-414 430MB Ext. | 812.95 |
| SS-540 540MB Ext. | 1076.78 |

PLI

| | |
|---|---|
| Infinity 88MB Syquest Int. | 395.20 |
| Infinity 88MB Syquest Ext. | 484.14 |
| Infinity 105MB Syquest Int. | 349.34 |
| Infinity 105MB Syquest Ext. | 405.71 |
| Infinity 270MB Syquest Int. | 499.80 |
| Infinity 270MB Syquest Ext. | 559.22 |
| Infinity 21MB Flopticel Int. | 309.82 |
| Infinity 21MB Floptical Ext. | 374.03 |
| Ininity 1.3GB MaxOptical Ext. | 2797.49 |
| Infinity 600MB MaxOptical Ext. | 1419.49 |
| Infinity 600MB Optical Ext. | 2429.87 |
| PLI 44MB Syquest Cert formetted | 73.66 |
| PLI 88MB Syquest Cart formatted | 108.13 |
| PLI 105MB Syquest Cert formatted | 71.49 |
| PLI 270MB Syquest Cart formatted | 103.87 |

**SCSI hard drives**

| | |
|---|---|
| Conner 343MB SCSI-2 | 324.53 |
| Conner 1.0GB SCSI-2 | 759.58 |
| Micropolis 1.05GB SCSI-2 | 742.24 |
| Micropolis 1.05GB AV SCSI-2 | 799.23 |
| Micropolis 1.75GB SCSI-2 | 932.77 |
| Micropolis 1.76GB AV SCSI-2 | 1028.87 |
| Micropolis 3.0GB SCSI-2 | 2008.78 |
| Seegate 1.0GB SCSI-2 | 821.10 |
| Seagate 1.69GB SCSI-2 | 1554.28 |
| Seagate 2.1GB SCSI-2 | 1486.04 |
| Seagate 2.9GB SCSI-2 | 2064.89 |

## Input Devices

CalComp

**DrawingSlate series**

| | |
|---|---|
| 6x9 corded pressure stylus | 228.53 |
| 12x12 cordless 4B cursor | 232.52 |
| 12x12 cordless 16B cursor | 228.53 |
| 12x12 cordless pressure stylus | 459.04 |
| 12x18 cordless 4B cursor | 357.48 |
| 12x18 cordless 16B cursor | 343.90 |

EPSON

| | |
|---|---|
| Epson 800C Pro | 1246.94 |

**Logitech**

| | |
|---|---|
| Logitech MouseMan | 63.80 |
| Logitech Trackman II | 64.80 |

**Microtek**

| | |
|---|---|
| 35T Slide Scanner | 1329.20 |
| ScanMaker II | 624.91 |
| ScanMaker IIXE | 877.82 |
| ScenMaker Auto Doc Feeder | 363.47 |

**Wacom**

| | |
|---|---|
| 6x8 Artz ADB, cordless pres stylus | 276.49 |
| 12x18 Standard, cordless pres stylus | 952.02 |
| 12x12 Electrostatic, cordless pres stylus | 699.33 |
| 12x12 UD-series, cordless pres stylus | 499.68 |
| 12x18 Electrostatic, cordless pres stylus | 996.74 |
| 18x25 Standard, cordless pres stylus | 2526.82 |
| Cordless 4B cursor | 97.40 |
| Cordless standard stylus | 52.50 |

## CD-ROM/Multimedia

| | |
|---|---|
| Micronet CD-ROM 325ms | 557.43 |
| NEC MultiSpin 3Xe 195ms | 463.57 |
| NEC MultiSpin 3Xi 195ms Int. | 431.60 |
| NEC MultiSpin 3Xp portable | 386.88 |
| NEC MultiSpin 4X Pro | 907.91 |
| Pioneer 6 Disc Quadraspin | 1061.09 |
| Plextor DM5028 240ms | 346.60 |
| Plextor DM3028 240ms Int. | 251.05 |
| PLI CD-ROM 200ms | 558.52 |
| PLI CD-ROM 295ms Int. | 373.35 |
| PLI CD-ROM 320ms | 393.48 |
| Toshiba 3401 200ms | 458.53 |
| Toshiba 4 Drive Tower 200ms | 1921.20 |
| Media Vision PAS 16 NuBus | 341.10 |
| Altec Lansing ACS100 Spkrs | 119.73 |
| Yamaha 10 watt Computer Spkrs | 69.95 |
| Yamaha Hello Music! MIDI | 252.73 |

## Printers

HEWLETT PACKARD

| | |
|---|---|
| DeskWriter 520 | 284.79 |
| DeskWriter 560C | 569.75 |
| LaserJet 4ML | 1024.80 |
| LeserJet 4MP | 1469.89 |
| LaserJet 4Si MX | 4359.50 |
| DeskJet 1200C | 2095.47 |

NEC

| | |
|---|---|
| Silentwriter 640 | 768.17 |
| Silentwriter 1097 | 1372.73 |

TEXAS INSTRUMENTS

| | |
|---|---|
| microLaser Pro 600 PS23 | 1359.70 |
| microLaser Pro 600 PS65 | 1528.25 |

## Power Backup

TRIPP LITE

| | |
|---|---|
| BC250 | 99.11 |
| BC400 | 155.59 |
| BC500 | 189.42 |
| BC500 LAN | 199.40 |
| BC600 LAN | 249.00 |
| Smart 250 LAN | 232.46 |
| Smart 400 LAN | 279.87 |
| Smart 500 LAN | 309.09 |
| Smart 600 LAN | 334.91 |
| Smart 750 LAN | 428.53 |
| Smart 900 LAN | 525.64 |
| Smart 1250 LAN | 659.66 |
| Isobar 4 | 38.95 |
| Isobar 6 | 46.38 |

## Performance Upgrades

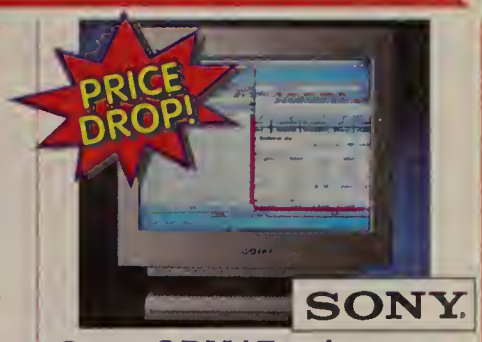
**Daystar**

| | |
|---|---|
| PowerCache 33Mhz w/FPU | 353.81 |
| PowerCache 50Mhz w/FPU | 535.16 |
| Value 040 33Mhz | 906.41 |
| Value 040 40Mhz | 1066.04 |
| Turbo 040 33Mhz w/FPU | 901.91 |
| Quad 040 w/128K | 947.20 |
| Image 040 40Mhz w/128K, DSP | 1527.91 |
| FastCache IIci 64K | 198.49 |
| FastCache Quadra | 288.29 |
| Charger | 479.43 |
| Charger Plus | 619.59 |

## Memory Upgrades

CDW carries Macintosh-compatible memory upgrades from Technology Works, Kingston, Simple Technology and more.

*Call today for the best price!*



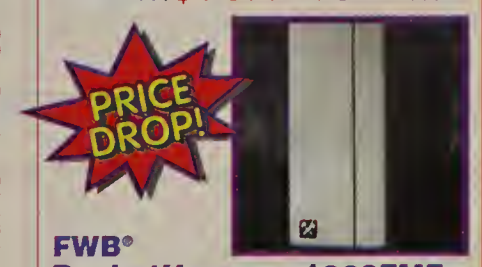

**Sony GDM17se1**

*Breakthrough Design!*

☆ 33% flatter than CPD displays ☆ .25mm aperture grille pitch ☆ On-board diagnostics ☆ All digital controls ☆ Refresh up to 100Mhz @1024x768 ☆ Max. Resolution 1600 X 1200 @ 60Hz ☆ Energy Star and MPR II compliant

ONLY! ... **$1119.89** CDW 33216

CPD 1730 . **$967.24** CDW 28890




**FWB® PocketHammer 1000FMF**

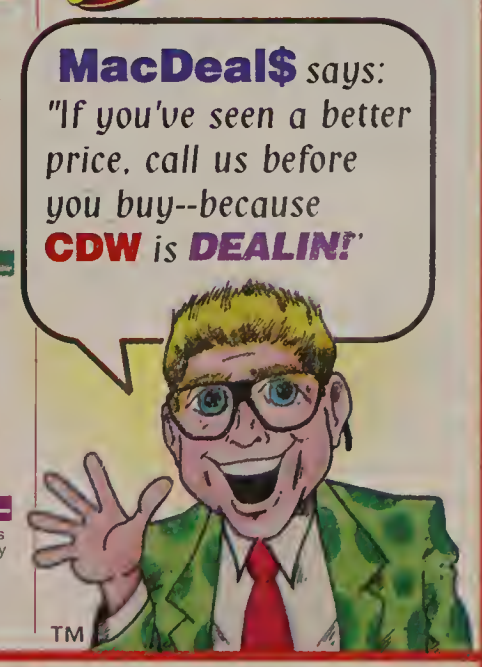
☆ 1000MB Fast Media Format mechanism ☆ 9.5ms access, 5400 RPM ☆ Fast SCSI-2, 512KB buffer ☆ Only 2.5" x 9.5" x 9.75" ☆ 2 year parts and labor warranty

ONLY! ... **$1119.51** CDW 36625

**RasterOps PaintBoard Lightning**

The latest addition to the RasterOps family!
☆ Up to 2900% performance boost
☆ 3MB DRAM
☆ Includes accelerator software

ONLY! ... **$762.72** CDW 34670




CDW® YOUR COMPLETE SOURCE FOR HARDWARE & PERIPHERALS

**CDW Computer Centers, Inc.**
**1020 E. Lake Cook Rd.**
**Buffalo Grove, IL 60089-1900**

**CDW® Sells for Less and Services You Better!**

**800 509-4CDW**

FAX (708) 465-6800

©1994 CDW® Computer Centers, Inc. MW992

**CALL TODAY FOR OUR FREE MACINTOSH CATALOG.**

Circle 2 on reader service card

ONLINE SERVICES PUT OTHERWISE SCATTERED CONVERSATIONS and resources all in one place that's accessible from your desk. On a variety of nationally available commercial online services—such as America Online, CompuServe, Delphi, eWorld, GEnie, and Prodigy—you can get stock quotes, technical support, or a dinner date; download software; use an encyclopedia; send mail and faxes; browse magazines; make airline reservations; and participate in written discussions on topics ranging from computers to politics to "Beverly Hills, 90210."

# Macworld's Guide to Online Services

## Which of these five services is right for you?

The convenience and dynamism is difficult to overstate.

Of course, many of the features offered by online services are available elsewhere, and the convenient access to them may be not be worth the price. Sure, it's neat to access the *Official Airline Guide* online, but why rack up charges to figure out the best pricing or to check seating availability when you can call a travel agent to do the same for free? You can send a letter to President Clinton by E-mail or the Postal Service, but either way it'll probably get minimal attention. And while you can read news and financial information online, doing so in large quantities gets expensive. If you really need that information for business purposes, your company should investigate more-direct methods of providing it, such as Dow Jones's DowVision (609/520-4677) or Desktop Data's NewsEdge (617/890-0042, 800/255-3343).

If you're looking only for electronic mail and an Internet mail gateway, you can get an account on a service such as MCI Mail ($35 a year plus some per-message charges; 202/833-8474, 800/444-6245). If you want full Internet access, you won't find it on most of the services covered here; only Delphi offers full Internet access to its members.

Another function that online services offer is the ability to send files to other users in addition to E-mail. The catch is that the recipient must also have an account on the service—so if you regularly need to transfer files to someone on a particular service, it may make the most sense to obtain an account on that service (see "Connect Your LANs," in this issue). Most of the services covered here do not allow users to attach files sent through the Internet, although users wishing to send simple text may find that copying the text into a mail document is the easiest way to send it.

When choosing a service, you should consider its general feel, its offerings, interface, support for Macintosh users, Internet access, and costs.

by Joanna Pearlstein

*Illustration by Mick Wiggins*

The appeal of the large online services is that they offer a wide variety of databases, topical discussion groups, and resources—in other words, the electronic version of a shopping mall.

Core services include general, business, and sports news; computer forums and news; reference materials; electronic mail and bulletin boards; business statistics and data; games; shopping services; travel services; and educational reference material.

Still, the different online services do have different emphases, so even though they all offer a range of basic services, they are not interchangeable.

• *America Online (AOL)* Within the core feature set on AOL (703/448-8700, 800/827-6364) you can find the Library of Congress, Compton's Encyclopedia, news organizations like Cable News Network and *Time*, an extensive software library, stock quotes, sports news, a career center, a Macworld forum, American Airlines reservations, chat rooms, and special-interest areas including everything from a ham-radio club to an active gay and lesbian forum. AOL's emphasis is on information for home, recreational, and business users.

• *CompuServe (CIS)* Known for its vast wealth of databases and research-oriented services for financial, legal, and medical interests, CompuServe (614/457-0802, 800/848-8199) offers the core set of services, as well as Books in Print, computer vendor forums, brokerage services, Consumer Reports, Associated Press news, and the electronic edition of the *Official Airline Guide.*

• *Delphi* An Internet-oriented service, Delphi (617/491-3342, 800/695-4005) offers most core services, with its main omissions being vendor forums and graphical software. Delphi offers news from Reuters and United Press International; stock quotes; airline and car-rental reservations; the Computerized AIDS Information Network (CAIN); the Nynex Electronic Yellow Pages (covering businesses in the Northeast); Grolier's Encyclopedia; movie reviews; and computer vendor forums for a variety of platforms, including Macintosh.

AOL and CompuServe have the most Macintosh resources

• *eWorld* By the time this article appears, Apple will have replaced its AppleLink service with its new online service, eWorld (408/996-1010, 800/775-4556) (see "Apple's Online Mall," *News, Macworld*, March 1994). At press time, eWorld was expected to launch in mid-June. A look at a prototype of the service revealed that its contents will be similar to those of other online services.

The core services that eWorld will provide include news from Reuters and *USA Today*, stock quotes, movie reviews, Grolier's Encyclopedia, a Living Well section, and a computer center. But with the service's software still in flux, it's too early to assess its potential success.

• *GEnie* Within GEnie's (301/340-4494, 800/638-9636) core areas, you can access stock quotes; Dow Jones News Retrieval; the Eaasy Sabre airline-reservation system; a GEnie mall; TRW business credit profiles; Grolier's Encyclopedia; forums for Macintosh developers and users; discussion areas; and a searchable database of articles from newspapers published in the United States, including the *Los Angeles Times*, *Washington Post*, and *Chicago Tribune*.

• *Prodigy* The core areas of the Prodigy Service (914/962-0310, 800/776-3449) let you use an encyclopedia, read news, go shopping, discuss computer problems, and get stock quotes. There are more kids on Prodigy than any other online service, and Prodigy's plentiful educational offerings include games, National Geographic adventures, and a Sesame Street area.

In recent years, Prodigy has come under fire for its policy of screening messages sent to message boards before posting them. Prodigy communications manager Deborah Borchert said if a message contains an obscenity or blatant bigotry or hate, the message will be returned to the sender. Borchert stressed that the screening is done only for message boards, not private E-mail.

## Mac Resources Compared

America Online and CompuServe have by far the most Macintosh resources.

**Vendor forums** Both AOL and CompuServe have lots of Mac vendors online, and those vendor forums are often good places to get technical support, exchange tips with other users, and download bug-fixes and new drivers. GEnie and Prodigy both have few Mac vendors online.

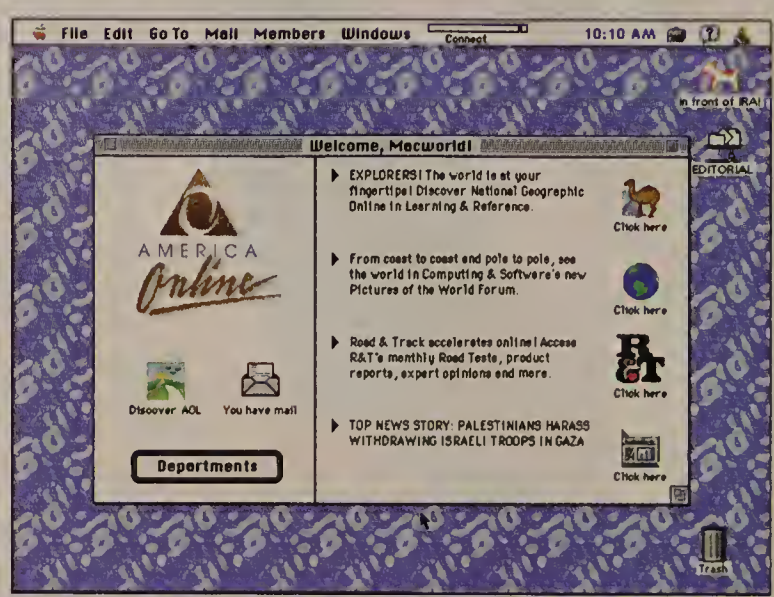
At press time, eWorld had 25 vendors online, including Aladdin Systems, Deneba Software, Farallon Computing, Global Village Communication, and SuperMac Technology. Apple said eWorld will have 50 Macintosh vendors online at launch, and the company will provide tech support for its own products through eWorld.

AOL and eWorld have a Macworld forum, while the ZiffNet/Mac service (which includes MacUser and MacWeek forums) is available on CompuServe, Prodigy, and eWorld (extra fees apply on CompuServe and Prodigy). ZiffNet/Mac is also available as a separate service ($2.95 per month plus some connect fees; 617/252-5000, 800/666-0330). In all three publications' areas, readers get a chance to chat with editors, ask questions, exchange tips, and read selections from the magazines.

**Software libraries** Offering more than 50,000 Macintosh files, America Online has the best software library; CompuServe follows with over 20,000 files. Shareware fans may want an AOL membership just for its extensive shareware collection. It's easy to get technical support or software files on AOL, but CompuServe's sophisticated text-searching abilities give CompuServe the edge over America Online in finding specific information. CompuServe charges users the hourly rate for accessing its excellent Mac resources. (Although CompuServe's 9600-bps access costs twice as much per hour as 2400-bps, you should download at 9600 bps because it usually takes about one-fourth the time. But it's cheaper to browse, send mail, and post notes at 2400 bps.)

Prodigy is the only national online service that doesn't provide software-downloading capabilities. Instead, the service sells shareware kits, which cost around $40 and are mailed to customers. Prodigy says that users aren't paying for the software, but rather for the "duplicating and cataloguing service." But it's hard to determine what exactly is included in the shareware kits, since there's no index, and paying for them pretty much takes the fun out of try-before-you-buy shareware.

**A View of Two Services** For getting around CompuServe (top), its Information Manager has icons, a tool bar, and a customizable list of favorite places. America Online's start-up screen (bottom) features colorful icons for navigation.




## Internet Access Still Limited

The only national service that offers full Internet access is Delphi. At press time, America Online users could access Usenet newsgroups. Access to Gopher and WAIS (Wide Area Information Server) databases is expected in the future. GEnie users can access an Archie server, browse an Internet software library, read newsgroup files, and ask GEnie staff members to retrieve files from the Internet. Apple has promised eWorld Internet functionality in the future. (See the sidebar "How to Ride the Internet" for information about Internet terms and service providers.)

CompuServe offers no Internet functionality beyond simple mail, and the service charges 15 cents for each Internet message sent and received. While the service lets you decide whether to read (and therefore be charged for) a message, users with heavy Internet needs may find CompuServe too expensive.

But Prodigy users fare even worse: to send Internet mail on Prodigy, members must use a mail-manager program—which, at press time, was expected to be available for the Mac by the end

# How Much Do Online Services Really Cost?

Because individuals' online usage varies widely, it's hard to characterize a service's costs in a single example. So, we chose three different scenarios (light, medium, and heavy use) to illustrate the wide range of fees an online user can incur. If you know how you would use an online service, the figures on the right will help you estimate your own costs.

**Light use** is a conservative estimate of online usage: 8 hours a month, 6 off-peak and 2 on-peak, all at 9600-bps. That includes no extended services and no Internet mail fees. (For Delphi we assumed the 10/4 plan.)

**Medium use** is a more generous estimate: 15 hours a month, 6 on-peak and 9 off-peak, with 3 hours of off-peak extended services and 10 Internet messages, all at 9600-bps. (For Delphi, we assumed the 20/20 plan and the $3 Internet fee.)

**Heavy use** is a very generous estimate: 15 hours a month of on-peak usage at 9600-bps (7 hours of extended services), 5 hours of off-peak usage at 9600-bps, and 30 Internet messages. (For Delphi we assumed the 20/20 plan and added the $9 hourly SprintNet charges that most people in the United States will incur during business hours.)

| SERVICE | MONTHLY FEE | | HOURLY RATES | | | | LIGHT USE | MEDIUM USE | HEAVY USE |
|---|---|---|---|---|---|---|---|---|---|
| | | | OFF-PEAK | | ON-PEAK[A] | | | | |
| | Price | Number of Off-Peak Hours Included | 2400 | 9600 | 2400 | 9600 | | | |
| America Online | $9.95 | 5 | $3.50 | $3.50 | $3.50 | $3.50 | $20.45 | $44.95 | $62.45 |
| CompuServe[B] | $8.95 | 0 | $4.80 | $9.60 | $4.80 | $9.60 | $8.95 | $39.25 | $80.65 |
| Delphi | $20.00[C] | 20 | | | | | $44.00 | $77.00 | $158.00 |
| eWorld | $8.95 | 2 | $4.95 | $4.95 | $7.90 | $7.90 | $44.55 | $91.00 | $142.30 |
| GEnie | $8.95 | 0 | $3.00 | $9.00 | $12.50 | $18.50 | $99.95 | $200.95 | $331.45 |
| Prodigy | $14.95 | 2[D] | $3.60 | $3.60 | $3.60 | $3.60 | $14.95 | $18.55 | $32.95 |

[A] Actual on-peak hours vary by service, but they tend to represent normal business hours. [B] Hourly rates for CompuServe apply only to extended services. You can access core areas for no hourly charge. It costs 15 cents to send or receive each Internet message. [C] Delphi has two pricing plans: the 20/20 plan costs $20 for 20 hours of use, plus $1.50 per additional hour. The 10/4 plan costs $10 for 4 hours of use, plus $4 per additional hour. Access to Internet services costs $3. Most Delphi users pay a $9-per-hour SprintNet charge for on-peak use. [D] Prodigy's hourly rates apply only when accessing extended services. The monthly fee includes 2 hours of access to those services.

of 1994. Today, Mac-using members can receive Internet mail, but not send it. Prodigy hopes to introduce full Internet access—including FTP, Gopher, and Telnet—later this year.

Some regional or special-interest services also offer Internet access. For example, one option is The WELL (Whole Earth 'Lectronic Link, 415/332-4335), a San Francisco Bay Area–based organization that has bulletin boards, a software library, and full access to the Internet. The WELL is popular with Bay Area residents, and its bulletin boards feature spirited discussions on political and social issues. But navigation is complicated, and accessing The WELL from outside Northern California is expensive.

Another online service is Women's WIRE (Worldwide Information Resource & Exchange; 415/615-8989, 800/210-9999), an Internet-providing bulletin board for women. WIRE is based on SoftArc's FirstClass, an excellent graphical bulletin board software product. WIRE contains information and discussion boards on a variety of topics, including news, health, arts, and technology. Organizations like the Boston Women's Health Book Collective and chapters of the National Organization for Women have folders on WIRE. Introduced earlier this year, Women's WIRE grew to over 650 members by the middle of March. Considering that more-traditional online services' members tend to be mostly men, women may find WIRE a welcome change. (To read about other BBSs, see *The Desktop Critic*, in this issue.)

## Adding Up the Costs

The costs of online services vary widely, depending on access speed, time of day, and services used. Most services charge a regular rate for core services and charge additional fees for extended or premium services (see the chart "How Much Do Online Services Really Cost?").

AOL, eWorld, and GEnie have fixed hourly rates, while CompuServe and Prodigy charge an hourly fee only if you're using an extended area. In February, CompuServe cut its prices by 40 percent, significantly lowering its overall costs. Now, most of the good stuff on CompuServe costs you $4.80 or $9.60 an hour, depending on your access speed; for $8.95 a month, using only the core services is cheap, and accessing the extra services at 2400-bps is fairly reasonable. In contrast, eWorld's hourly rates apply at all times, so daytime users pay $7.90 an hour for access, regardless of connect speed. The true effect of this pricing structure may be that eWorld is one of the most expensive services around.

On Prodigy, accessing all but four areas costs nothing more than the monthly fee of $14.95. Users pay the hourly rate for accessing bulletin boards, stock quotes during trading hours, company news, and airline reservations. Prodigy is the only service that places advertisements on its screens, which may keep its costs low.

Delphi offers two payment plans. To get the best deal, you need to predict how many hours you're likely to use the service each month. Delphi's 10/4 plan costs $10 for 4 hours of monthly usage; the 20/20 plan costs $20 for the first 20 hours. Enrolling in Internet services (as most users will want to do) costs an additional $3 per month, Sprint's $9-an-hour phone charge applies during business hours. If you use Delphi in the evening, the price is right, but if you're a business user, the phone surcharges may make the cost prohibitive.

# How to Ride the Internet

The Internet is a lot of things—President Bill Clinton and Vice President Al Gore's "data superhighway," a fast international post office, a file library, a bulletin board, a newsletter, a conference center, as well as a big database.

The Internet is a tremendous network of networks, connecting more than 1.7 million computers all over the world. Some are personal computers, and some are mainframes located at large educational, corporate, or government institutions. You can use the Internet to send electronic mail, access databases, retrieve files from all over the place, have conversations online, and participate in discussions on a variety of subjects.

Every person on the Internet has a unique user name, the components of which usually indicate the user's identity and the organization providing access. For example, the user name *whoever@aol.com* shows the user's name, the service providing access (America Online), and the category of service. The *com* in the Internet address above means the address is accessed through a commercial service. Other three-letter suffixes indicating the organization type are *gov* (government), *mil* (military), *edu* (educational), *org* (organization, usually used for nonprofits), and *net* (network).

**How do I get on?** Types of Internet access vary. The most complete and expensive Internet access is dedicated access, requiring a phone line and a routing computer. Dedicated access is best for large institutions that have the money and resources to devote to Internet upkeep. If your organization has an Internet connection (as many corporations, government organizations, and schools do) but you don't have access, talk to your network administrator.

If you're an individual who wants Internet access, you can get an account on a commercial Internet service provider, like Netcom, or you can purchase a more direct account, called a SLIP (serial-line Internet protocol) or PPP (point-to-point protocol) account, also from an organization such as Netcom. An account from a commercial Internet service provider may cost between $15 and $50 a month; an account on Netcom could cost more than $100 a month. A dedicated connection (providing you with the ultracool *your company.com* suffix on your E-mail address) can cost thousands of dollars annually.

Using the Internet means using some Unix commands, but there are a few programs that provide easier Internet functionality for Macintosh users. One is Mosaic, a free product from the University of Illinois's National Center for Supercomputing Applications. But you can't use these products unless you have a SLIP, PPP, or more direct dial-in account.

Spry Inc. is working with book publisher O'Reilly & Associates on a product called Internet in a Box, which will provide users with graphical Internet applications, an opportunity for an Internet account on NovX InterServ, and a special edition of Ed Krol's *The Whole Internet User's Guide and Catalog* (see "Internet in a Box . . . ," *News*, July 1994). A Mac version of the product is expected later this year, and will cost about $100. Ventana Media offers a similar product, the $70 Internet Membership Kit (919/942-0220), providing two books and access via CERFnet.

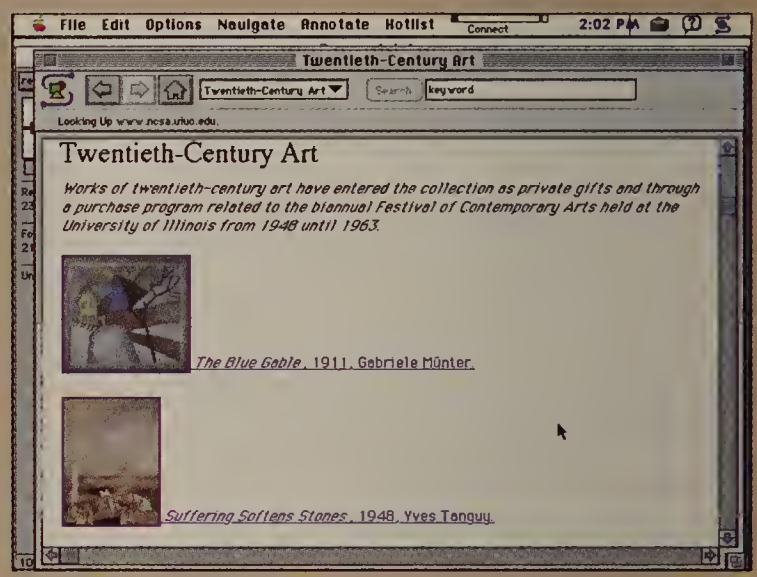
**Sending mail** To send mail to someone on a commercial online service over the Internet, you need to append routing information to the person's E-mail address. For example, a CompuServe user's Internet E-mail address is *username*@compuserve.com (CompuServe's user names include a comma, which you should replace with a period; such substitutions are not needed for other services).

Some businesses set up Internet mail gateways through office E-mail systems; these addresses can get quite complicated, and it's best to have the user E-mail you first so you can just copy the address into a macro or address book.

Users with Internet access can usually send files to others on the Internet; receiving those files usually means dealing with your telecommunications software's file-transfer protocols (see "Pick the Right Communications Software," elsewhere in this issue).

To cut down on connect time, you can use the Eudora Internet mail program, if you have a SLIP or PPP account. A free version is available on the Internet, and Qualcomm (619/587-1121) sells a version with more features for $50.

**File transfer** Internet also lets you transfer files using various commands. In Internet lingo, you use FTP—it stands for File Transfer Protocol, and it's used both to identify the protocol and to indicate using the protocol. You can log in to an FTP site, browse files, and download them, which involves transferring them first to your Internet account and then to your own computer. You don't need your own account at the FTP site: many let you use *anonymous* as your user name and your E-mail address as a password. Because some Internet service providers charge users for disk space, FTP may involve extra costs if you transfer large files.



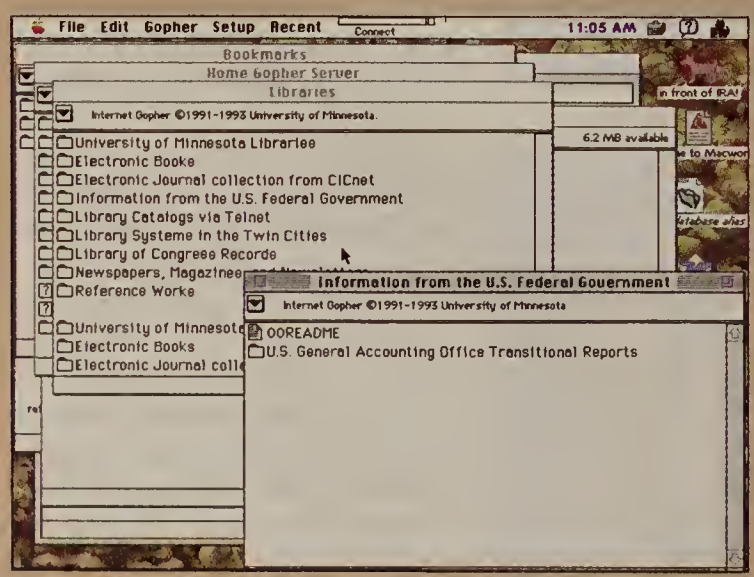

**User-Friendly Internet** Mosaic, a hypertext Internet browser, displays pictures and lets you navigate by clicking the mouse. Here, Mosaic is browsing the collection at the University of Illinois's art museum.

You can FTP via telecommunications software, or try an FTP-specific program like Fetch, written by Jim Matthew of Dartmouth College. The program is free to noncommercial users, and costs $25 for commercial folks. (For information, send E-mail to fetch@dartmouth.edu.)

FTP files are usually free. You can FTP files from Apple, the National Institutes of Health, the Internet Network Information Center, the National Science Foundation, and various literary archives, just to name a few—there are thousands of FTP sites.

Don't know where to find a file you want? Archie will tell you. Archie puts a list of FTP files into one database on a server, and lets you search for files easily. There are Archie servers all over, and you can access them via E-mail, Telnet (explained later), and on GEnie and Delphi.

Similar to FTP, Gopher lets you find and retrieve remote files. But unlike FTP, Gopher




**Gopher by Mouse** The University of Minnesota's TurboGopher comes preconfigured to access Gopher servers in a Mac-like folder hierarchy. Unfortunately, TurboGopher is very slow, even at 9600 bps.

connects to the host site only to retrieve menus of information and disconnects for browsing, whereas FTP remains connected the entire time. One Mac Gopher program is the University of Minnesota's TurboGopher (free from several servers), which acts as a client to Gopher servers. The Archie of Gopher is called Veronica. Veronica is an index of Gopher archives and can be reached on Gopher servers.

**Remote log-in** The Telnet command lets you log in to another machine remotely. You might log in to a remote computer to search a database or log in to another account on the Internet. Telnet is particularly helpful if you have an account in another city, because you can log in remotely to save phone charges.

**Newsgroups** Usenet (also called Net News) collects received messages (or articles) on a particular subject and sends them to a mailing list. There are lists for every topic under the sun.

**File searching** WAIS (Wide Area Information Server) lets you search files based on content, giving commands as colloquial as "tell me about AIDS treatments." You can use Telnet to connect to a WAIS or log in to one directly using WAIS client software.

**Service providers** If you send E-mail to the following addresses of a cross section of Internet service providers, you'll receive a reply with information about pricing, availability, and connection instructions.

Among nationally available providers are Advanced Networks and Services (313/663-7610, info@ans.net), Delphi (617/491-3342, 800/695-4005; info@delphi.com), and Netcom On-Line Communications Services (408/554-8649, info@netcom.com).

Among regional providers are Colorado SuperNet (303/273-3471, info@csn.org ), Holonet (510/704-0160, info@holonet.net) in the San Francisco area, and The World (617/739-0202, info@world.std.com) in the Boston area.

**Resources** Because the Internet is sprawling and largely unmanaged, it's hard to get a handle on how to use it effectively. Fortunately, there are some good resources to help you navigate it. One of the best is the Internet Network Information Center (619/455-4600, 800/444-4345). Your local user group may offer Internet access.

Your local bookstore may have lots of books on the subject. My three favorites are Bernard Aboba's *The Online User's Encyclopedia* ($32.95, 1993, Addison-Wesley Publishing Company, 617/944-3700, 800/822-6339), Adam C. Engst's *The Internet Starter Kit for the Mac* ($29.95, 1993, Hayden Books, 317/581-3500, 800/428-5331), and Ed Krol's *The Whole Internet User's Guide and Catalog* ($24.95, 1992, O'Reilly & Associates, 707/829-0515, 800/988-9938). Aboba's is best for information about all things telecom, while Engst's comes with several pieces of TCP software. Krol's book has fewer lists but remains an excellent resource.

## Interface Issues

When you do join a service, you're adopting a culture, and it can take a while to get acclimated.

**America Online** AOL feels like a Mac environment, from the menu and icon-driven interface to the friendly voice that announces "You've got mail."

America Online recently added more E-mail functionality, so that members can now mark already read mail as unread so it remains in the box, as it were, and can unsend mail already sent to AOL users. eWorld has some of the same abilities, but AOL's prices give it a significant edge.

AOL looks and behaves like a Macintosh program should. Each area has a designated keyword, and getting around is as easy as typing ⌘-K and then the keyword. But while getting to an area is easy, getting *around* it isn't—arrow keys work for navigating some things, but sometimes there's no alternative to clicking on buttons.

Another problem with American Online is its inability to search message boards based on content, or to do threading (navigating through related topics). You can read only messages posted since you last visited the area or in the last *x* number of days. If you want to read everything, that's great, but if you just want to find an answer to your question, patience is helpful. Having to read entire blocks of messages also increases the cost of AOL, since you spend more time looking for what you want than you would if you could search for it by keyword.

**Delphi is the only service offering full Internet access**

Earlier this year, AOL users experienced problems with logging on and slow performance, and those connection problems continued for some users in large U.S. cities in late May, partially because of problems with Sprint, a company providing local access numbers. Pam McGraw, spokesperson for America Online, said there are isolated instances where subscribers are experiencing difficulties at the local-access level. "We're continuing to work to resolve those issues," McGraw said. The service's checkered history does not inspire confidence. Still, AOL's friendly organization makes adjusting to the service fairly easy.

**CompuServe** CompuServe looks and feels huge, and it can be reached through either of two graphical software packages: CompuServe Information Manager (CIM) and CompuServe Navigator. Users can also access CompuServe in text-only format from any standard telecommunications program, but unless you're a masochist, there's no real reason to do so, since CIM comes with CompuServe's $39.95 starter kit. CIM version 2.3 provides a Microsoft Word–like tool bar for frequently accessed functions like mail, searches, weather, Go words (the commands to move to a specific part of the service), and connecting. CIM also provides a "favorite places" list that makes for easy navigating.

But CIM's keyboard equivalents are also limited—the Find command isn't even assigned to the Mac's standard ⌘-F. Not all of CompuServe's areas support a graphical interface, and CIM is smart enough to switch to a textual interface when necessary. However, switching between CIM's terminal emulator and the graphics software can be confusing.

The other graphical navigation option, Navigator, is a complex program whose main purpose is to retrieve information to be read offline. Users can tell Navigator to log in to CompuServe, get mail, read particular message boards, search software libraries, and log off. The user can then read the Navigator log, which contains the information that Navigator retrieved, without incurring access fees while reading. Navigator is far

more sophisticated than any other online-service software I have seen, and while it is expensive ($50 to $70, depending on current CompuServe specials), a serious CompuServe user won't want to be without it.

Despite its sometimes awkward graphical interface, CompuServe excels in its ability to search data. CompuServe's search options include location, text string, and date, making it very easy to find what you want. Searching for information about bugs in your new software? Just type **bug** and select the vendor forum and the appropriate date, and CompuServe shows you all the relevant messages. You can also hit a map button that displays a hierarchy of messages and their authors.

**Help on the Way** Macintosh users can exchange tips, get technical suppport, and download software from Apple in the company's Customer Center on eWorld.

**Delphi** I found Delphi easier to navigate than any other text-based service I've used. Delphi is organized by menus, and a user can type the first few letters of an item to select it. Unlike other services, where commands differ depending on the part of the service you're using, Delphi responds to logical commands, and online help is easy to find.

Like CompuServe, Delphi can follow messages according to topic, but unlike with CompuServe, you can't search areas for keywords or dates. Reading Delphi message boards can take some getting used to, but the information tends to be useful. If you can't live without a pretty interface, Delphi isn't for you.

**eWorld** Built with software from America Online, eWorld looks and feels very much like AOL but with reorganized menus and different fonts. As in AOL, getting around eWorld can be a pain, since users often have to click through several screens to get to their destination. eWorld's graphics are rich and colorful, but as a result the software takes up over 3MB of disk space—almost twice as much space as other services' software. eWorld will eventually replace AppleLink, and since Apple plans to make eWorld software a part of every Mac-and-hard-drive bundle it sells (starting no later than July), the service's membership may grow quickly. For eWorld, the test will be not how many people get memberships, but how many people keep them.

**GEnie** While GEnie offers good information, it's an ASCII-based service—the introduction of long-promised graphical software has been delayed repeatedly. Because GEnie is text-based, you can access it from any telecommunications program.

GEnie's organizational metaphor is a book, and areas are located on particular pages. To move to a certain area, a user types a forum name or, in some cases, **Move** *page number*. Within areas, topics are organized by categories, and navigating the categories is sometimes difficult. Members can't search message boards by content; as with America Online, GEnie users can select messages based only on criteria such as posting date.

**Prodigy** The Prodigy online service is fairly easy to navigate: a tool bar at the bottom of the Prodigy screen lets you get to the main menu quickly. Prodigy uses "Jump" words that are equivalent to AOL's keywords and CompuServe's Go commands. Unfortunately, like AOL and GEnie, Prodigy can't do message-threading.

While navigation is mostly simple, accessing Prodigy from a Macintosh is a pain. The Mac version of Prodigy has an atrocious interface. For example, because Prodigy uses enormous screen fonts, users often have to move through several screens to read an entire message, and there is no cut-and-paste.

This August, Prodigy expects to ship a new version of Mac software. I looked at a beta version of it that allows access to other applications and offers cut-and-paste capabilities, but still doesn't follow basic Mac software-design guidelines. Prodigy representatives said that they just didn't feel it was worth the effort to create a Mac interface.

## What's Right for You

Commercial online services offer hundreds of services, and it's unlikely that you'll want—or use—all of them. In picking an online service, consider what you'll use it for most. If you want access to particular computer vendors, first determine whether they have their own bulletin-board system (their manuals usually tell you). Your local user group may also have a BBS that provides technical support and Internet access. (To find a local user group, call Apple's user-group hotline at 800/538-9696, ext. 500.) America Online and CompuServe have the most Mac vendors online. All services are good sources of news and financial information, and America Online's E-mail is cheap, easy-to-use, and reliable.

If you are having trouble deciding between services, see what specials they are offering. America Online and Delphi regularly advertise free trial memberships. Apple offers free eWorld software, but no free access time. If you are considering CompuServe, determine whether the areas that you will use most are going to incur CompuServe's hourly fees. CompuServe is a good choice for users who need reference materials, while the best choice for E-mail is America Online. Both services' Mac resources are excellent. Users seeking Internet access may want to use Delphi in the evening or get an account through an Internet service provider.

If you can afford it, you should try out a few services. The one you wind up using most is probably best for you. **m**

### Online Services

MW EDITORS' CHOICE

To pick the top online services, we gave the most weight to the breadth and depth of information, with emphasis on a Macintosh owner's needs, followed by price and ease of use.

**E-MAIL**

**America Online** Relatively cheap and easy to navigate, America Online is the best choice for E-mail users. Company: America Online. Basic monthly fee: $9.95.

**REFERENCE**

**CompuServe** With graphical software and new lower prices, CompuServe is the best choice for users seeking reference materials. Company: CompuServe Information Service. Basic monthly fee: $8.95.

JOANNA PEARLSTEIN, a *Macworld* assistant editor, is a frequent contributor to the reviews and news sections of the magazine.

# Introducing a printer for those who have ideas bigger than this page.

*Suggested U.S. list price. **Larger model lists at $11,595. †Pantone, Inc.'s check-standard trademark for color. Adobe and PostScript are trademarks of Adobe System Inc. which may be registered in certain jurisdictions. ©1994 Hewlett-Packard Company PE12410

The HP DesignJet 650C/PS printer. Large-format at a small price.

$9,995*

Go on. Give yourself room to think. With the HP DesignJet 650C/PS, you can now print in sizes up to 2′ by 9′ (up to 3′ by 9′ with our larger model**). Right in your office. Right away. No tiling. No hang-ups. No problem. Just clean, inkjet output with PANTONE®†-licensed colors. Adobe™ PostScript™ Level 2 software and a built-in RIP are included. For an output sample, call **1-800-354-7622, Ext. 8277.**

HEWLETT® PACKARD

Circle 11 on reader service card

# You never thought you'd

# lose your looks, either.

**BUT YOU WILL.
AND THE ODDS ARE YOU'LL LOSE
YOUR DATA, TOO.**

In the last 12 months alone, half the respondents in a recent MacUser subscriber survey had lost data. It happened to them. And you can bet it's going to happen to you. Fortunately, you can avoid the inevitable with Retrospect from Dantz.

**THE NUMBER ONE BACKUP SOFTWARE FOR THE MACINTOSH.** We're not talking about some after-the-fact recovery utility that sends you digging through the trash and sifting through the scraps. But rather, full-blown, 100% seamless restoration. Something you'll definitely want when the data really hits the fan. With automatic backups, point-and-click operation, unparalleled performance, total support of every type of storage device, and ridiculously simplified network operation.

**RETROSPECT HAS SWEPT THE TOP INDUSTRY AWARDS.** From the MacWeek Diamond Award to the coveted MacUser Editor's Award. So whether it's for a single user, or an entire network, Retrospect will keep you covered. And at a price you can afford—less than $200 for individuals, a bit more for networks. To learn how Retrospect can help you, visit your local dealer. Or call Dantz at **1-510-253-3020** to receive a free copy of our white paper: Backup—Personal Computing Insurance.

**What have you got to lose?**

dantz®

Circle 26 on reader service card

SO YOU BOUGHT A HIGH-SPEED MODEM, ONE OF THOSE 14,400-bps items that are so cheap nowadays, and logged some time on simple communications: faxing friends, dabbling with the America Online trial package, and looking at Dow Jones quotes for stock you'll never buy. Now you're eager to do some real work—

# Pick the Right Communications Software

## The best bets for making the online connection

telecommute from home to the office mainframe or set up a customer-support BBS for the service department. Plus, with this speedy modem now fully operational, you're just dying to try out that precursor to the information superhighway, the Internet.

Your modem gives you easy access to all of these: bulletin boards by the thousands, commercial information services, mainframes and minicomputers, and gateways to the Internet. As with all of life's journeys, you need to equip yourself for the trip, which means choosing the right software. The choices you make depend on how far you want to travel and what you want to see along the way. You have to weigh features such as protocols, terminal emulations, file-transfer support, and scripting capabilities. If your communications needs are limited to online services, such as America Online or CompuServe, you can probably get by with the software that came with your modem (see "*Macworld*'s Guide to Online Services," elsewhere in this issue). But if you want to communicate with the rest of the world, you need more. The following guided tour surveys the most popular Mac communications packages, helping you pick a package that matches your budget and digital itinerary.

### Zimply Ezzential

Bulletin board systems (BBSs) are like the swap meets of the global village: people of like interests meet to exchange war stories, advice, and tangible goods. You can find a BBS for virtually every special interest, from aviation to zoology. You can even set up your own BBS for others to access; all you need is a modem and BBS host software.

Accessing most BBSs requires only a simple terminal emulator with file-transfer capabilities for uploading and downloading files. One inexpensive product fills this role perfectly: ZTerm. This $30 shareware gem by David P. Alverson (5635 Cross Creek Ct., Mason, OH 45040-2448; CompuServe: 72155,1560) is a well-outfitted, finely crafted terminal emulator for exploring the vast network of BBSs that now stretches across North America (see "Two Bulletin Board Systems"). You can download ZTerm from any major online service and many BBSs, or for an extra $10 get the latest version on disk directly from the author (mail orders only—no phone calls, please). ZTerm supports communication speeds up to 57,600 bps, to take full advantage of the compression capabilities of high-speed modems; VT100 and PC-ANSI terminal emulation (used by most BBSs); automatic log-in for one-step dialing and sign-on; keyboard macros; and a reasonable suite of file-transfer protocols. A wide range of file-transfer protocols is one of the most important requirements in a program designed for BBS hopping, because not every BBS supports every protocol. ZTerm supports X-modem and Ymodem protocols in all their variations, as well as the currently popular (and fast) Zmodem. ZTerm also supports the CompuServe B-Plus and Quick-B protocols, which give the fastest file-transfer performance possible with CompuServe's online service—important when you're using the extended services and paying connect charges by the minute. ZTerm's Queue Dialing command lets you repeatedly dial a list of BBSs to connect to the first one that becomes free. ZTerm also lets you transfer files in the background while you use other applications, albeit with lower file-transfer throughpu

ZTerm is a great low-cost tool for BBS work and Mac-to-Mac file transfers, but it has its limits. While it supports color text, it can't send and receive graphics, and its interface is nongraphical. ZTerm's scripting is simple and limited to automating log-on and log-off, and ZTerm provides no support for multiple sessions. Even so, ZTerm should be in your travel kit even if you eventually opt for something more expensive.

by Mel Beckman

*Illustration by Will Crocker*

### The Scenic Route

Although most BBSs use primitive character-based terminal emulators, a growing number of systems now offer a graphical user interface (GUI) that gives them a Mac-like look and feel. Two products, both shareware, open your Mac to the world of GUI BBSs: FirstClass, from SoftArc (416/299-4723), and Tele-

Finder Pro, from Spider Island Software (714/669-9260). Currently, FirstClass has more than 500 BBS sites in existence; TeleFinder has about 100. Both products consist of two parts: server software that runs on the actual BBS host system ($95 for FirstClass, $425 for TeleFinder), and client software that a caller uses to connect to the BBS. SoftArc and Spider Island make their money selling the server piece to BBS operators, which is why the client piece is distributed for free (or nearly so) to users through online services and BBSs.

**A growing number of BBSs now offer a graphical user interface**

Both products support file archives, discussion boards, real-time conference areas, and gateways to other systems and networks, all of which are represented by icons. In this way they are similar to the graphical front ends for CompuServe and AOL. The critical difference is that you can connect to a wide range of BBSs rather than a single commercial service. Which product you choose depends on which BBSs you want to use; you must use client software that matches the server software.

In both programs you can open multiple windows to access several online services at once. FirstClass offers a purely modeless interface, meaning you can do any number of things at the same time (see "Two Bulletin Board Systems"). For example, you could be downloading one or more files while simultaneously browsing a message base and monitoring a real-time conference. With TeleFinder you can do only one online thing at a time. Both products let you use other Mac applications while downloading files in the background. TeleFinder's interface mimics the Mac Finder, with icons for both disk volumes and online services sitting on a desktop—an arrangement that some people find confusing. FirstClass organizes its icons in windows without changing your desktop's appearance.

The FirstClass and TeleFinder server components turn your Mac into a complete BBS. The price of server software depends on the number of simultaneous users you want to support—anywhere from a few hundred dollars to $1000 or more. Many Mac vendors and user groups use FirstClass or TeleFinder for customer-support BBSs.

## Road Warriors

Sometimes you may want the Mac to run routine online chores automatically. Perhaps you need to retrieve your E-mail from an online service at regular intervals throughout the day, or transfer large files at night when phone rates are lower, or collect hourly stock quotes to import into a spreadsheet. Such tasks require scripts that tell the communications software what to do and when to do it. For scripting capability, you need to step up to the next level of communications software.

The Mac market is replete with scriptable comm programs, but a few stand out for their combination of simplicity, power, and value: Crosstalk for Macintosh ($195, Digital Communications Associates, 404/442-4000), MicroPhone II and MicroPhone Pro for the Macintosh ($195 and $295, respectively, Software Ventures Corporation, 510/644-3232), SmartCom II ($149, Hayes Microcomputer Products, 404/441-1617), and VersaTerm ($125, Synergy Software, 215/779-0522).

For the price, VersaTerm is hard to beat. You can create scripts automatically by having VersaTerm observe your actions and record them for later playback. VersaTerm supports X-modem and Ymodem file-transfer protocols, but strangely, not Zmodem, an omission that doesn't rule out file transfers to a given service, but does mean slower transfers. If you connect with Unix systems, you'll be glad for VersaTerm's Kermit and

# How to Buy a Modem

A modem is the most cost-effective enhancement you can buy for your Mac system. If your work requires current financial, legal, or medical information, your modem can actually be your main justification for owning a computer. But even if you only download software occasionally through national online services such as America Online and CompuServe, your modem will quickly pay for itself. And a fax modem lets you avoid paper-based clutter and the ridiculous intermediate step of printing a computer document before sending it to someone else's computer. And as faster modems make transmission times negligible, even for large documents, telecommuting becomes possible for a wider range of jobs. A modem now makes sense for almost every Macintosh user, so the real question is: how much speed do you need to buy, and for what price?

Buying a modem is more confusing than adding memory or a new printer. Manuals for modems tend to feature cable-connect pinouts, timing diagrams, arcane CCITT jargon, and tables of the time-honored Hayes AT commands. If you have to deal with modem communications at this level, you'll wish you had an electrical engineering degree. Here's some advice on buying a modem and on choosing software that lets you dodge most of the technicalities of modem set-up and operation.

## The Works

A modem's job is really fairly simple: it takes the digital output from your files or your keyboard and transmits it via telephone lines as a pattern of tones (a fax modem scans a document and translates the light and dark patterns into tones that it then transmits across the lines). The circuits that do this conversion have only one or two chips, so the price of modems falls steadily.

Let's review the options for modem hardware currently available. Then I'll make some buying recommendations.

## Five Ways to Go

OLD, SLOW, AND CHEAP There are millions of old 1200-bps modems floating around, and it's often possible to cajole someone into giving you an old unit. Don't buy one, though.

FASTER BUT STILL CHEAP Many vendors offer plain old 2400-bps modems (no fax capability) for basic communications, and these modems can often be found bundled with introductory offers for subscriptions to national online services.

BASIC FAX Standard fax modems, offering 9600-bps fax and 2400-bps data communications, are available at street prices ranging from $100 to $160. Some offer extra amenities: the Home Office 144e ($269 list price) from Prometheus Products, for example, includes a voice-messaging system; and it works with your phone over a single phone line, instead of requiring a dedicated line for fax transmission.

Apple bundles the Global Village TelePort/Bronze fax modem with midrange Performa models. If you are thinking of buying a new Mac, this is a way to get a fax modem at a good price and to avoid set-up hassles, as the included software handles the details.

RIGHT HERE, RIGHT NOW If you regularly telecommute or download remote database data, you need a fax modem that offers 9600-bps data transmission and 9600-bps fax, such as Global Village Communication's TelePort/Silver and PowerPort/Silver.

Modems that transmit data at 14,400 bps and also have 14,400-bps fax send/receive capability are beginning to supplant 9600-bps modems. The SupraFaxModem 144LC, selling for $189.95, for example, includes V.42bis compression, permitting E-mail throughput at 57,600 bps. And at this price, it's hard to make a case for a slower modem, at least for users who connect for more than an hour a day.

CompuServe now has 14,400-bps dial-up numbers in large cities, and other services will follow soon. The 14,400-bps speed itself will be old news in a year or so, but right now there are few services that accommodate faster standards.

MODEMS ON THE MOVE Very small portable external modems (pocket modems) for PowerBooks offer the advantage that you can unplug them and use them with a desktop Mac. One particular performance bargain, Bay Connections' SpectraCom P1414 ($249 list price), offers 14,400-bps data and fax transmission and V.42 compression.

## Do This

GET THE FAX Vendors have pretty much stopped making modems without fax capability, since fax adds almost nothing to the modem's cost.

BUY SPEED If you're going to be playing interactive games or corresponding in real time and little else, modem speed isn't an issue. Typing 50 words per minute clocks out at about 5 bps, making 2400-bps modems more than adequate. But for downloading files from online services, speed makes a critical difference when you start to total up your connect charges. In fact, 9600-bps data access is still a real bargain. For the few dollars required to make the jump from 2400 bps to the next common speed, 9600 bps, you get a fourfold speed increase; another 20 to 30 percent increase in price gets you to the next level, 14,400 bps.

## Decision Time

The appropriate choice for most casual users will be a 9600-bps fax/2400-bps data modem, or a 9600/9600 unit for users who anticipate needing to do both file transfer and faxing in a business or home-office setting. Since the software is independent of these speed considerations, check out the reviews of bundled software independently.

PETER ALSBERG

by Charles Seiter

## Different Names for Fast

Here's a brief explanation of current modem terminology.

- V.32 A communications standard used for most popular 9600-bps data transfer.
- V.32BIS A communications standard generally used for 14,400-bps (14.4-Kbps) modems.
- V.32TERBO A standard for 19.2-Kbps data transfer. This standard is not as widely accepted by modem vendors.
- V.FAST A standard for 28.8-Kbps data transfer (a neat 24 times faster than your old 1200-bps unit). V.Fast modems cost about twice as much as V.32 modems and will for the next year or so.
- V.42BIS A compression standard that speeds data transfer (at least to other V.42-capable modems) by a factor of four.
- V.29 The most widely accepted standard for 9600-bps fax transmission. Since this speed is typical of millions of stand-alone fax machines, V.29 will be around for a few years.
- V.17 The standard for 14.4-Kbps data transfer, emerging as the most popular choice in computer-to-computer faxes.

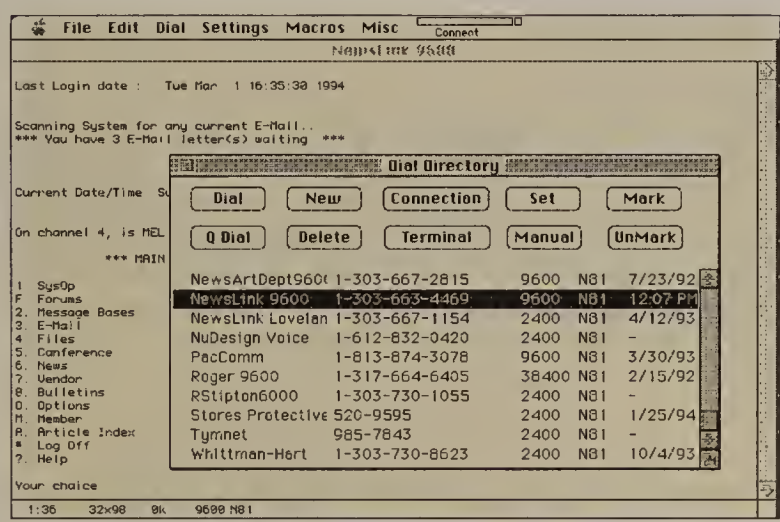
TCP/IP FTP protocol support. Terminal emulations include DEC VT100 and VT220, Tektronix Tek4014, and Data General D200, along with keyboard layouts for DEC, IBM, DG, and Unix systems. You can use these emulations to exchange E-mail and data with your corporate mainframe. VersaTerm supports multiple simultaneous connections over serial lines (with several modems) or via AppleTalk or TCP/IP networks. A server feature lets VersaTerm users on an AppleTalk network access other networks through a gateway Mac. The emulation is fast, able to keep up even on high-speed connections. Inconveniently, however, VersaTerm lets you view only one network connection at a time, even when several are active.

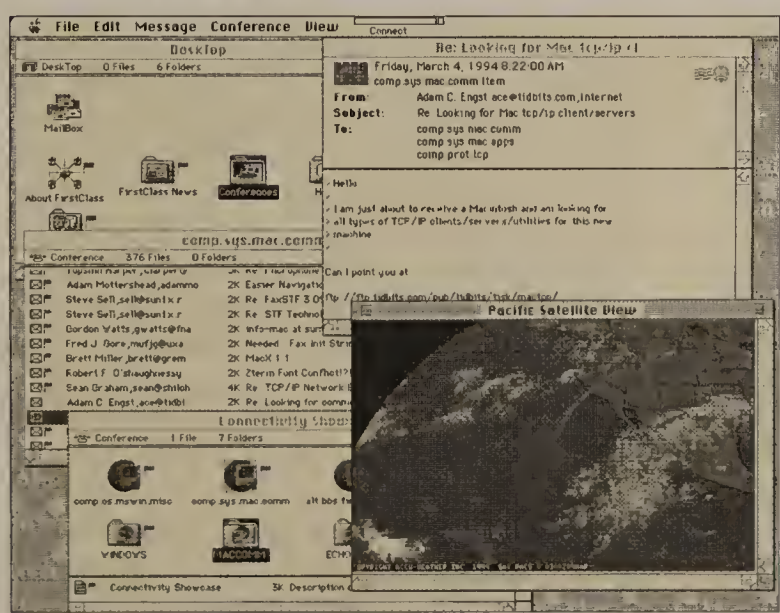
While VersaTerm's recording feature simplifies script creation, the script language itself is cryptic; its special characters and control sequences are impossible to grok without serious study of the programming manual. If you plan to create and maintain a lot of scripts, consider the pricier MicroPhone II or MicroPhone Pro. Both let you create scripts using the Watch Me command—and then view those scripts in something akin to English (see "Power Communicator"). You edit scripts with a syntax-sensitive editor that lets you choose script statements from a scrolling list and then prompts you for statement arguments. Instant syntax checking prevents grammatical errors. You can create button palettes to let users invoke scripts with a single mouse-click. In addition to better scripting, MicroPhone II supports Zmodem and CompuServe Quick-B file-transfer protocols, and VT320 and PC-ANSI terminal emulations, none of which VersaTerm handles. For $100 more, MicroPhone Pro adds TCP/IP Telnet, FTP, and Usenet news client programs and fax send-and-receive software. But buy only the features you need.

At $195, the same price as MicroPhone II, Crosstalk offers more-powerful, although more-complex, scripting, and a more inclusive set of terminal emulations and file-transfer protocols than either MicroPhone or VersaTerm. For terminal emulations, Crosstalk adds IBM FFTERM and 3101, HP 700/94, VIDTEX, WYSE, ADDS, and PCTERM. Crosstalk is also the only Mac terminal emulator that speaks the arcane IND$FILE file-transfer protocol used by IBM's IBMLink mainframe network. Crosstalk's scripting is more robust than VersaTerm's but harder to use than MicroPhone's; the package also includes a huge array of script files preconfigured for online services, making good use of an elaborate button palette.

SmartCom II is another specialist's tool. It works extremely well with Hayes modems (not surprising, since Hayes developed it). Its terminal-emulation and file-transfer capabilities match those of MicroPhone II, but the scripting in version 4.0A is icon based rather than text based. The program comes preconfigured for virtually every Hayes modem ever made (with free updates whenever new ones hit the market). If you have a Hayes modem, SmartCom II gets you connected in a snap, though you'll have to live with its limited scripting. If you have a Hayes-compatible modem, SmartCom II provides support for several vendors and dozens of models.

**Two Bulletin Board Systems** ZTerm (top) gives you all the basics for BBS hopping: terminal emulation, file transfer, and a great dialing directory. FirstClass (bottom) uses icons and windows to put a graphical front end on BBS systems. Its fully modeless interface lets you transfer files while browsing messages, viewing graphics, or searching databases.




## Internet Interstate

The Internet global network is a precursor to the anticipated information superhighway that promises to connect everyone to everyone, just as soon as we all get fiber-optic phone service and digital doorbells.

One way to connect to the Net is to use any basic terminal emulator to dial in to an Internet-connected Unix system. (All of the packages described so far are fine for this.) You then type arcane Unix commands such as **ftp**, **whois**, and **ping** to talk with other computers on the Net. A better Internet connection is something called SLIP (serial-line Internet protocol): you use a SLIP dial-up program to dial in to an Internet gateway and establish a local area network (LAN) interface. Gateways are fee-based services costing between $1 and $4 per hour. A SLIP connection gives your Mac a LAN presence on the Net, just as Apple Remote Access gives you an AppleTalk presence on a Mac network. However, SLIP uses the TCP/IP protocol instead of AppleTalk, so you need Apple's MacTCP extension in addition to a SLIP connection program.

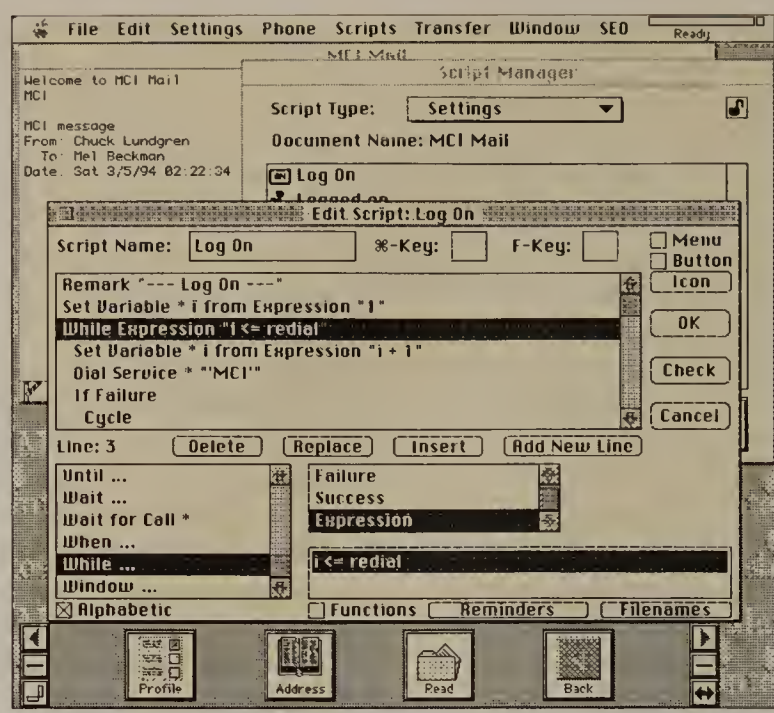
Two popular SLIP products for the Macintosh are Versatilities ($95, Synergy Software, 215/779-0522) and TCP/Toolz & Toyz ($149, InterCon Systems Corporation, 703/709-5500). Both contain all the Internet connectivity components you need to get started: MacTCP; a SLIP connection tool; and clients for Telnet terminal emulation, NetNews, E-mail, directory services, and FTP file transfer. Versatilities is bundled with VersaTerm, making that package a real communications bargain for Mac Net surfers. A subset of InterCon's tools is included in Adam Engst's book-and-disk combo, The Internet Starter Kit for Macintosh ($29.95, 1993, Hayden Books, 317/581-3500). The book provides a nice introduction to the Internet; you'll find it useful no matter what SLIP product you ultimately use to tie into the Net.

Once connected via SLIP, your Mac acts as if it were connected over a 100-gigabit-per-second optical cable, only not as fast. Your Mac acts as a full-fledged network, and you can run any number of TCP client programs simultaneously. Client programs let you access services provided (for free) by the many far-flung host systems through-

**Participating in the online global village is cheaper and easier than ever**

out the Net—including colleges, libraries, research institutions, software companies, and governments. Typical client programs include Telnet for terminal emulation, FTP for file transfer, and NetNews for browsing the eclectic newsgroup discussions for which the Net is famous. Some client programs, such as the freeware MacMosaic, combine several client functions with hypertext, graphics, movies, and sound to make navigating the Net easier than ever, if no less exhausting.

By the time you read this, at least one other Internet start-up package should be on the market: Internet in a Box (a joint venture of Spry Inc. and O'Reilly & Associates, 707/829-0515, $149). This book-and-disk combination plate includes a number of advanced Internet client software programs, MacMosaic among them, and a subscription to O'Reilly's Mosaic server called Global Network Navigator, which provides a central source for Macintosh Internet news as well as updated software and various network-navigation tools.




**Power Communicator** MicroPhone's scripting is straightforward and easy to use. Its Watch Me command enables you to build scripts effortlessly, and its syntax-sensitive editor lets you edit scripts using English-like statements.

## Other Horizons

Beyond communicating with online services, BBSs, and the Internet, you can use your modem to perform a number of specialty communication chores, such as LAN access, remote Mac and PC control, pager notification, and information services.

The most popular remote LAN access software for the Mac is Apple Remote Access (ARA), a two-part system that lets you connect your Mac to an AppleTalk LAN over a phone line by calling one of the Macs on the LAN. Originally included with PowerBook systems, ARA is now a separate purchase item from Apple. ARA MultiPort Server ($249, Apple Computer, 408/996-1010) runs on the LAN-attached Mac; ARA Client ($129) runs on the remote Mac (and comes bundled with the new 500 series PowerBooks). On the road you use ARA Client to call your server Mac and establish a LAN connection. You then can mount volumes and share programs and data as if you were locally attached to the LAN, the only difference being considerably slower access speed.

Sometimes you want more than just remote access to a LAN—you want to remotely control another computer completely, to provide technical support or operate unattended equipment. Timbuktu Pro ($199, Farallon Computing, 510/814-5000) lets you dial into a remote Mac or Windows computer and observe a verbatim copy of the computer's desktop. You can then manipulate files and launch programs, just as if you were working onsite. You run Timbuktu on both machines, and either establish a dedicated Timbuktu modem connection or use an existing ARA or other network connection. In fact, Timbuktu's connection features are so versatile that you could operate a remote Mac through the Internet, using an Internet-connected TCP/IP LAN, or by dialing into an Internet provider using SLIP. Timbuktu Pro's file-transfer capabilities and support for Apple's PowerTalk mail extensions make it a nice all-around telecommuting package.

Want to give your computer the power to reach out and touch someone? Try Notify ($149, Ex Machina, 718/965-0309), which lets your Mac dial paging services to send wireless messages. Notify works with alphanumeric, numeric, and tone-only pagers, using your modem to send either data or touch-tones to the pager's dial-up line. You simply select a person to notify from a directory, enter a message, and Notify dials the paging service to transmit the message.

A number of specialty information services use dial-up connections to deliver news digests, stock quotes, and E-mail. One such service is Motorola's EMBARC (Electronic Mail Broadcast to A Roaming Computer; $395 plus subscription fees, Motorola, 407/364-3151). EMBARC delivers E-mail, news, and financial information over its pager-size NewsStream radio receiver that you connect to your computer like a modem. The receiver collects messages into its own onboard memory, which you later download into your computer. To send outgoing E-mail, EMBARC dials up a host machine using a regular modem and telephone line. The package includes the NewsStream receiver and special software; you must also pay monthly subscription fees and per-message charges.

## End of the Line

With modem speeds at an all-time high and modem prices at an all-time low, participating in the online global village is easier and cheaper than ever. But don't make the mistake of buying the most expensive comm software available, thinking that you'll cover all the bases. No single package meets every need. If you're new to online communications, get your feet wet with services such as America Online and CompuServe, which provide one-stop shopping for such basic services as E-mail, discussion groups, and file archives. You can then advance to BBS exploration and perhaps mainframe access. Eventually you'll want to get on the Internet, if only to see what all the racket is about. m

MEL BECKMAN, senior technical editor for *News 3X/400* and communications consultant, spends his waking hours as mbeckman@mbeckman.com.

### Communications Software

There is no single best communications package—what to buy depends on the kind of communicating you want to do. These are the standout products in the most common categories.

**BASIC CONNECTIVITY**

**ZTerm** Every Mac modem jockey needs a copy of David Alverson's shareware program, ZTerm. It's fast, capable, and easy to use—a great lowest-common-denominator terminal emulator. **Company:** David P. Alverson. **List price:** $30.

**TERMINAL EMULATION**

**Crosstalk for Macintosh** For BBS hopping and mainframe access, you need lots of terminal-emulation options to utilize graphics capabilities and scripting to automate access to each system. Crosstalk has the widest selection of terminal emulators and a power user's scripting language. **Company:** Digital Communications Associates. **List price:** $195.

**INTERNET EXPLORATION**

**VersaTerm** This program's combination of excellent Unix-style terminal emulation and the Versatilities collection of Internet tools makes it your one-stop shopping center for Net surfing. **Company** Synergy Software. **List price:** $125.

# Before you consider a third party external drive, look at what we've brought to the party.

Introducing Apple® External Hard Drives. Now you can add reliable external storage to your Mac with all the quality you expect from Apple, at prices that will surprise you.

Apple External Hard Drives are bundled with everything you need to begin safely storing your data right away, including a power cable, a SCSI cable, and a terminator. Convenient front-panel SCSI ID and power controls make it easy to power up and change your SCSI address – whether you set the drive up vertically or horizontally.

The new Apple drives are available in four convenient storage capacities, 160Mb, 230Mb, 500Mb and 1000Mb, and are manufactured exclusively by La Cie, Ltd. a Quantum Company. And right now we're celebrating the Apple Drive debut by loading each drive with powerful hard disk management software, handy utilities and much more.

Look for the Apple Drive at your local dealer soon. For more information and the name of a participating reseller or Quantum distributor, call La Cie.

Now you can safely store your work outside your Mac without leaving the Apple family.

That's cause for celebration. Apple

*For All The Facts Call:* LACIE LIMITED A QUANTUM COMPANY **800-999-0499**

© 1994 La Cie, Limited. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc., registered in the United States and other countries used under license therefrom.

**Circle 51 on reader service card**

# THE MORE, T

## (THAT'S THE PHILOSOPHY BEHIND NEW FILEMAKER PRO SERVER.)

*It may sound like a party, but the benefits are far more substantial. You see, FileMaker® Pro Server lets you and your entire workgroup do more, more quickly. (Not a bad thing to celebrate.)*

*Maybe your company's expanding, where more users will need to access files simultaneously. Or perhaps you're looking for more power to speed existing operations. FileMaker Pro Server is here, at your service. It's a high performance database engine, designed to dramatically accelerate multi-user file sharing over your network. In fact, its sophisticated client/server technology can speed database performance by up to 100 percent over FileMaker Pro 2.1, and increase multi-user file access from 25 to 100 simultaneous users per file.*

*Connecting FileMaker Pro Server to your existing network is simple. It can support both Macintosh and Windows users. And while it's compatible with standard Mac systems, including Centris and Quadra, it's also accelerated (native) for Apple's new Power Macintosh systems.*

*Due to its simple plug and play design, the Server can be run by anyone in your organization, not just network administrators or those with database experience. To begin sharing files, simply take any FileMaker Pro file off a desktop machine and drop it on the Server. You needn't worry abou modifications or upgrades. It's all in one box.*

©1994 Claris Corporation. All rights reserved. Claris, FileMaker and the FileMaker design are registered trademarks, and Simply Powerful Software is a trademark of Claris Corporation. Apple,

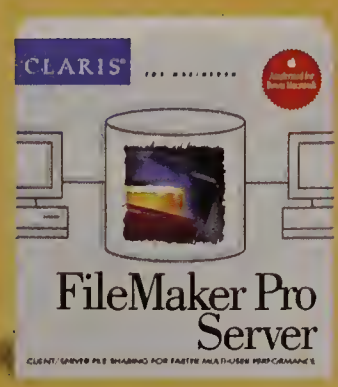
# HE MERRIER.

*Comprehensive, graphical administration 'eatures ensure that the administrator can quickly ınd easily monitor file-sharing over the entire ıetwork, as well as Server performance.*

*You might be wondering if FileMaker Pro Server can stand up to the daily rigors of your ›usiness. Rest assured. We've already put the ›roduct through our own torture chamber: the Claris® Testing Lab. We experimented with a ·ange of Mac and Windows computer models, ·unning them in a wide array of network and file ·onfigurations--up to 100 computers at a time. We ran tests and made refinements for a full six nonths. So as more and more of you become ıetworked together, you'll find fewer clock and ·offee cup icons on your screens.*

*So come on! Grab a FileMaker Pro Server and get the whole gang working more productively! It'll definitely be more satisfying than the company picnic. (Sorry, onion dip and chips not included.)*

*You can get FileMaker Pro Server now from software resellers all over the world. If you'd like the name and address of the dealer nearest you, call Claris Customer Assistance at 1-800-3CLARIS.*




CLARIS®

*Simply* powerful software.™

Claris and Macintosh Quadra are registered trademarks, and Power Macintosh is a trademark of Apple Computer, used under license. Windows is a trademark of Microsoft Corporation.

The best printers include (from top to bottom) the Tektronix Phaser 300i, the Tektronix Phaser 220e, and the Hewlett-Packard DeskWriter 560C.

MW LAB

# COLOR PRINTERS FOR EVERY BUDGET

## Macworld Lab tests 16 ink-jet and thermal-wax printers

**by Jim Heid**

Still procrastinating over making the leap to color printing? You may be running out of excuses: printer manufacturers keep discovering better, faster ways to apply pigments and render images, and for less money.

The latest color machines still aren't about to replace monochrome printers—regardless of how it works, a color printer is slower, more expensive, more complex, and more finicky about paper than its monochrome equivalent. But for business presentation materials, for page proofs, and for any applications beyond gray-scale, this is a good time to follow the rainbow.

Or, more accurately, *rainbows:* each of the several color-printing technologies offers its own strengths and financial requirements. Liquid ink-jet printers span the price spectrum, ranging from $379 to over $10,000 (see "Finding the Best Business Color"). Half the printers, however, are low-end machines priced at well under $1000. These are best for simple applications such as printing color presentations and jazzing up reports with colored graphs and spot color.

Solid ink-jet machines, priced between $5595 and $9995, are popular among publishers, thanks largely to an ability to print on nearly any kind of paper. Thermal-wax printers have become the mainstays for business color printing, generally offering better output quality and faster performance than ink-jets can. Prices for thermal-wax machines have fallen into the monochrome laser territory, ranging from $995 to $8999.

For this survey, Macworld Lab tested 16 ink-jet and thermal-wax machines; last month we reviewed dye-sublimation printers, which produce photographic results but generally sell for between $8000 and $20,000 (see "Photo-realistic Color Printers," *Macworld*, July 1994).

The printers tested for this roundup don't do as well with scanned images; to simulate subtle color and shading shifts, they create dot patterns—this process is called *dithering*—that obscure fine details.

We also tested QMS's ColorScript Laser 1000, the first color laser for less than $10,000. (Other color lasers sell for at least twice that.) The QMS machine produces vivid and durable transparencies and handles a wide range of paper stocks, but it has some drawbacks (see "Color Lasers Move to the Desktop").

are part of a disposable cartridge that also contains a supply of ink. The print head travels left and right, making dozens of passes in the course of producing a page.

The ink itself is water based and often wicks into the paper's fibers as it dries, giving text and line art fuzzy edges. The latest ink formulations from Hewlett-Packard and Canon—the two companies that build every liquid-ink mechanism tested—dry more quickly than did earlier inks and are much less prone to wicking, especially if you print on the special, coat-

the real news is at the low end. After striking out with the Apple Color Printer, Apple returned to the drawing board and came up with the $629 Color StyleWriter Pro. What an improvement.

Hardware-wise, the 11-pound Color StyleWriter Pro is an Apple-repackaged version of Canon's BJC-600, which is winning accolades in the DOS/Windows world. (The BJC-600 can be used with Macs when paired with GDT Softworks' [604/291-9121] $149 PowerPrint driver and cable package.) Like the defunct

## Wide Variations in Color Fidelity and Quality

When it comes to creating smooth gradations in color and to representing the colors of an original image accurately, you tend to get what you pay for with thermal-wax and ink-jet printers. Compared against the original image (top left), the print from the $5995 Tektronix Phaser 220i (top center)—one of the most highly rated units—came closest to reproducing the difficult transitions between purples, greens, and blues in the background of the original image. It also did the best job of preserving fine details. Look at the points of the green star in the top-center portion of the image and the white S to the lower right of the star. (Note: The banding on this image is an artifact of the process used to print this magazine.)

The Phaser 220i's corporate sibling, the $9995, solid ink-jet Phaser 300i (top right), performed relatively well but didn't quite match the crisp details of the 220i.

In contrast, the $1298 NuDesign Color Printer (bottom left) darkened the scene so much as to evoke images of Batman's Gotham City. The NuDesign unit, as well as the $629 Apple Color StyleWriter Pro (bottom center), also suffer from serious banding of colors during transitions, such as in the background.

The $4995 General Parametrics SpectraStar GTx (bottom right) was able to handle color transitions fairly well, but it suffers from an overall washed-out quality. Nor could it capture fine lines, such as those on the document near the upper left corner of the image. The GTx represents the green star as a smudge.

When looking at these images, bear in mind that in most cases, an actual printout will be slightly brighter and more vivid than can be reproduced with the technology used to produce this magazine page.

**Original**

**NuDesign Color Printer**

ILLUSTRATIONS BY STEVEN LYONS

### Into the Liquid Inkwell

All color printers produce output by applying cyan, magenta, and yellow pigments. But each color-printing technology has its strengths and quirks; printers that excel on plain paper might fall flat with overhead transparency film. To pick the right printer for your jobs, it helps to understand how the technologies work.

Liquid ink-jet printers are spray painters. They use an array of microscopic nozzles that spew liquid ink onto the paper. In liquid-ink printers, the nozzles

ed paper that ink-jet manufacturers sell.

Today's inks are also less likely to smear when the output gets wet. In my scientific output-durability test—wiping a wet finger across the page—the inks used in the Hewlett-Packard DeskWriter printers resisted smearing better than the inks used by the Canon, IBM, and Apple printers—all of which have Canon mechanisms.

### The Battle at the Bottom

Although the past year has brought progress in every color-printing technology,

Apple Color Printer, the Color StyleWriter Pro produces 360 dpi, but the similarities end there. Apple eschewed the often-finicky SCSI bus in favor of a serial interface. That makes connecting the printer easier but could mean buying a serial switch box if your Mac's printer and modem ports are already occupied.

The Color StyleWriter Pro's fast-drying inks all but eliminate the wicking problem. Dramatically improved driver software adds a scatter-dithering option, which delivers better results with scanned

images. The new driver also provides better support for Apple's ColorSync color-management software.

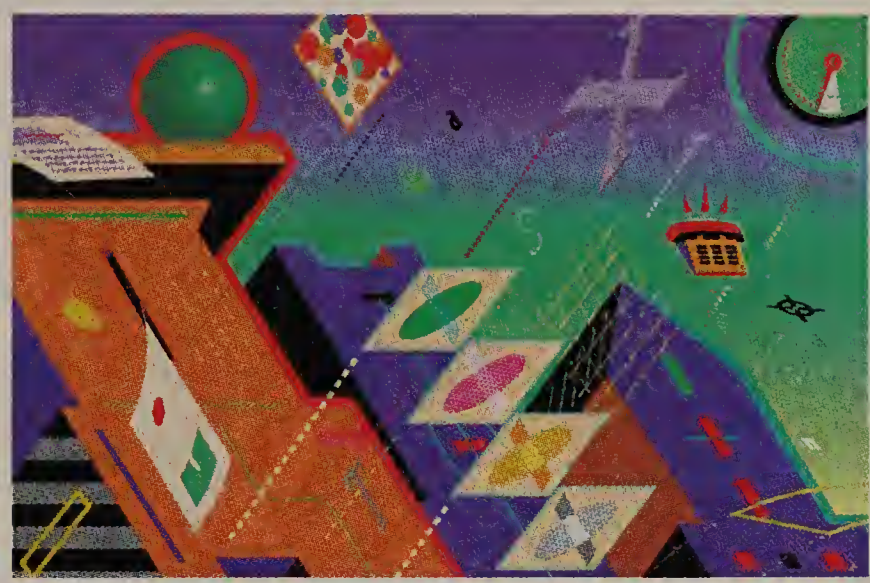
The results from the improved driver made a good impression on our output-quality jury—12 *Macworld* editorial and art-department staff members. In five out of seven comparisons of unlabeled output, the majority of our jury preferred the Color StyleWriter Pro to its closest tested competitor, Hewlett-Packard's $719 DeskWriter 560C. The Color StyleWriter Pro didn't do as good a job with text (the the slow side, too. In our tests, done with a prerelease version of the driver, the printer never did reach Apple's claim of two minutes per page. At least the output is worth waiting for.

The Color StyleWriter Pro breaks no speed records, but neither does HP's DeskWriter 560C. The latest in HP's noble line of ink-jets provides 600-by-300-dpi resolution and the Resolution Enhancement Technology previously found only in HP's laser printers. Like all of HP's Mac-compatible ink-jets, the DeskWriter you're likely to have to replace the $34.95 cartridge more often—even if only one chamber runs dry.

### Moving Up: PostScript Ink-Jet

QuickDraw printers such as the Color StyleWriter Pro and the DeskWriter 560C give mediocre results when used with PostScript-oriented programs such as Adobe Illustrator and Aldus FreeHand. In the past, the answer has been PostScript-clone interpreters that run on the Mac, such as TeleTypesetting Company's

**Tektronix Phaser 220i**



**Tektronix Phaser 300i**

**Apple Color StyleWriter Pro**

**General Parametrics SpectraStar GTx**

DeskWriter 560C provides higher resolution), and its output appeared a bit more mottled than that of the DeskWriter, with less consistency in the ink coverage.

Like all of the printers tested, the Color StyleWriter Pro can be shared on a network. But unlike the other machines, Apple's ColorShare driver technology makes the host Mac (the one connected to the printer) do all the work required to process jobs. That means the host slows down as it handles jobs from other Macs on the network. The printer itself is on 560C provides a LocalTalk port, making it better suited to network sharing than Apple's Color StyleWriter Pro.

While the Canon-based machines tested provide four ink cartridges (cyan, magenta, yellow, and black), the DeskWriter 560C provides two: a black cartridge and a tricolor cartridge containing cyan, magenta, and yellow inks. This makes replacing ink a bit easier (the Canon cartridges can leak if you aren't careful), but because each of the tricolor cartridge's ink chambers are so small, T-Script ($85 to $495, 617/734-9700). DeskWriter 560C and Color StyleWriter Pro users have another choice: true Adobe PostScript Level 2 interpreters that run on the Mac. HP offers a $249 PostScript Level 2 software driver kit for the DeskWriter 560C.

GDT Softworks offers similar software, the $149 StyleScript, for the Apple Color StyleWriter Pro. StyleScript is based on Adobe's Configurable PostScript Interpreter (CPSI), which up to now has been used only on high-end

printers such as 3M's $20,000 Rainbow dye-sublimation unit. CPSI has stiff memory requirements, though—8MB minimum and up to 12MB for large PostScript images, according to GDT Softworks. Even on a fast Mac, you won't get sizzling performance, and your Mac will slow as it processes print jobs.

Hardware-based PostScript printers deliver better performance, yet there are only three choices in the liquid ink-jet world. We tested two of them: Lexmark's $3199 IBM Color Jetprinter PS4079 and Canon's CJ-10 with PostScript interface option. (The third machine is HP's $2749 DeskJet 1200C/PS.)

Lexmark's IBM Color Jetprinter PS4079 combines the 360-dpi engine built by Canon for the BJC-820 with a built-in PostScript-clone interpreter. The Color Jetprinter PS4079 is more tortoise than hare—it was the slowest printer tested when used in its best-quality mode, wherein the print head pauses for eight seconds after each pass to allow the ink to dry and prevent one pass from bleeding into the next. In its faster mode, the printer cut 30 percent or more time in four of five tests, not to damn it with faint praise.

To its credit, though, the Color Jetprinter PS4079 provides a built-in LocalTalk port and is compatible with DOS/Windows machines—Apple's Color StyleWriter Pro and HP's DeskWriter 560C can't make that latter claim. The Color Jetprinter PS4079 is also the only liquid ink-jet tested that provides an emulation mode for the Hewlett-Packard Graphics Language (HPGL), which ensures the printer's compatibility with drafting and computer-aided design packages. Its ability to handle 11-by-17-inch paper also makes it a good choice for drafting applications.

The Color Jetprinter PS4079 provides enhanced halftoning options, called ColorGrade, that deliver good results with scanned images. Indeed, our output jury generally preferred the Color Jetprinter PS4079's output to that of the other PostScript liquid-ink machine: Canon's CJ-10, which retails for $10,990.

Ten grand for a liquid-ink printer? Yes, but the CJ-10 is actually a desktop copier that marries a Canon color-copier to a 400-dpi ink-jet print mechanism. It's a good enough copier to prompt a warning in the manual against copying currency and stamps. Front-panel buttons let you adjust brightness, contrast, and color balance as well as reduce and enlarge. The copier also accepts an optional ($1250) slide-scanning attachment and a video adapter ($1800) that lets you print images from a camcorder or other video source.

The $10,990 version of the CJ-10 includes Canon's CJ PS-IPU PostScript interface. The PS-IPU sits beneath the copier and turns it into a PostScript print-

## How Fast for Business Color?

Best result in each test. Printers are listed by category in decreasing order of overall speed. Times are in seconds. Smaller bars are better.

| Printer Name | PostScript Graphic: Print speed for a FreeHand illustration that includes special PostScript effects, such as nonlinear blends and Bézier curves. | Object-Oriented Graphic: Print speed for a complex MacDraw Pro document containing more than 840 color objects, most of them gradient-filled. | Photoshop RGB Using Plug-in: Print speed for a 7MB, 200-dpi, RGB Photoshop file using the printer's driver. | Page-Layout Document: Print speed for a 4-page PageMaker newsletter with several fonts, a PostScript graphic, a PICT file, and color TIFF file. | Presentation-Graphic Transparency: Print speed for a PowerPoint transparency with gradient background and color TrueType text. |
|---|---|---|---|---|---|
| **Thermal-Wax/Laser** | | | | | |
| Tektronix Phaser 220i | 87 | 351 | 618 | 171 | 55 |
| Tektronix Phaser 220e | 118 | 566 | 639 | 224 | 61 |
| DEC DECcolorwriter 1000 | 116 | 489 | 702 | 229 | 66 |
| CalComp ColorMaster Plus 6603XF[1] | 144 | 378 | 586 | 301 | 91 |
| General Parametrics SpectraStar GTx[1] | 104 | 348 | 1695 | 308 | 80 |
| QMS ColorScript Laser 1000 | 116 | 446 | 3121 | 230 | 107 |
| Tektronix Phaser 220e[2] | 292 | 644 | 682 | 322 | 97 |
| NuDesign Color Printer[3] | 366 | 411 | 405 | 1138 | 278 |
| QMS ColorScript 230 | 179 | 469 | 4639 | 384 | 122 |
| Tektronix Phaser 220i[2] | 416 | 986 | 792 | 463 | 111 |
| DEC DECcolorwriter 1000[2] | 417 | 992 | 778 | 433 | 119 |
| **Solid Ink-Jet** | | | | | |
| Tektronix Phaser 300i | 142 | 396 | 737 | 406 | 92 |
| Tektronix Phaser 300i[2] | 339 | 597 | 893 | 963 | 234 |
| Dataproducts Jolt PSe | 358 | 864 | 2290 | 1046 | 331 |
| Dataproducts Jolt PSe[2] | 430 | 934 | 2212 | 1185 | 586 |
| **Liquid Ink-Jet** | | | | | |
| Canon CJ-10 with PS-IPU[4] | 191 | 530 | 1607 | 530 | 158 |
| Apple Color StyleWriter Pro[3] | 402 | 667 | 227 | 523 | 301 |
| Canon CJ-10 with IPU SS[2,5] | 558 | 1039 | 118 | 1739 | 232 |
| Hewlett-Packard DeskWriter 560C | 425 | 441 | 540 | 811 | 1128 |
| Apple Color StyleWriter Pro[2,3] | 499 | 736 | 328 | 1014 | 436 |
| Lexmark IBM Color Jetprinter | 459 | 1068 | 800 | 765 | 602 |
| Canon BJC-820[5] | 618 | 1109 | 385 | 1906 | 371 |
| Hewlett-Packard DeskWriter 560C[2] | 763 | 547 | 882 | 1419 | 1075 |
| Lexmark IBM Color Jetprinter[2] | 1197 | 1514 | 1503 | 3525 | 592 |

*[1] Default resolution is same as enhanced mode. [2] Tested at high resolution. [3] Tested using serial-to-parallel converter. [4] High resolution is default. [5] Tested using SCSI port.*

### BEHIND OUR TESTS

Macworld Lab gauged printer speed with a variety of documents and techniques, each designed to test performance from a different perspective. Except where noted differently, we tested the printers at default resolution, using the LocalTalk port.

The PostScript Graphic test shows the performance of a PostScript printer's controller. The Object-Oriented Graphic document also tests controller processing performance. The Photoshop test measures the printer's ability to handle large bitmapped images as well as network interface performance. The Page-Layout test gives the printers a good overall workout and demonstrates how well each machine handles typical publishing jobs. The Presentation-Graphic Transparency test looks at a primary business use for this class of color printer.

To judge output quality, 12 staffers from *Macworld's* editorial and art departments compared four different unidentified printouts against photographic prints of the original images, looking at highlights, shadows, color accuracy, and text.

**—Macworld Lab testing supervised by Mark Hurlow**

QMS's $9999 ColorScript Laser 1000 is the first desktop-laser color printer—but your desktop had better be capable of supporting a hefty 106 pounds. The printer uses four toner cartridges; setup and maintenance are more cumbersome than with other color technologies, with numerous hoppers, belts, and drums to replace at varying intervals (see *Reviews, Macworld,* July 1994).

One big advantage the ColorScript Laser 1000 has over competing technologies is its low operating cost. You can use cheap photocopier bond instead of the ultrasmooth laser bond or special, coated stocks that thermal-wax machines require. Also, the amount of toner applied varies depending on what's on each page; by comparison, a thermal-wax printer always uses an entire set of four ink sheets for each page, wasting pigment for pages containing mostly white space. These factors combine to deliver output that costs only 5 to 10 cents per color page, versus about 60 cents for thermal-wax.

**QMS ColorScript Laser 1000** Vivid output, though blotchy in spots.

Where output quality is concerned, there's good and bad news. The good news is that business documents look great—colored bar charts and spot-color headlines stand out beautifully against sharp black text. (Our output jury gave high marks to the machine's text quality.) The output is also more durable than thermal-wax or solid-ink output, with no flaking or scratching.

But the printer's colors aren't as vivid as those produced by competing technologies, nor do scanned images look as good. (The printer ranked near the bottom in most image-quality tests.) The printer's speed in most tests was good, although it finished second-to-last among all printers tested in our Photoshop test.

But the ColorScript Laser 1000 isn't designed for prepress or digital-imaging applications. It's intended to provide color capabilities to a workgroup that would otherwise use a monochrome laser printer, and it meets this goal. The ColorScript Laser 1000 is suitable for business color applications and for printing short runs of color documents such as presentations. You decide whether these strengths outweigh relatively slow performance, and high maintenance requirements and price.

At press time, QMS announced another color laser printer: the QMS magicolor Laser Printer, which is the world's first 600-dpi color laser printer. The magicolor uses an engine similar to that of the ColorScript Laser 1000 (indeed, an upgrade is available for $2499, including installation). Unlike many thermal-wax machines, the magicolor provides 600-dpi resolution in both the horizontal and vertical dimensions. The sample output I examined boasted smooth-edged text and halftones whose quality matched that of the best solid-ink and thermal-wax machines.

By the time you read this, the magicolor Laser Printer should be available in two configurations: a $9999 model that prints in monochrome at 600-dpi and in color at 300-dpi; and a $10,999 model that supports 600-dpi color. (The only other difference between the two is memory: the low-end version provides 12MB, while the all-color model contains 28MB.)

Xerox (800/275-9376, ext. 4900) will also offer a desktop color laser unit, the 4900 Color Laser Printer, which should be announced by the time you read this. The printer will sell for under $10,000 and boasts a resolution of 1200 by 300 dpi. The unit is aimed at the same market as the QMS units—business color for presentations, marketing materials, and internal reports.

er. A unique operating mode lets you combine a photocopy with a computer document—to superimpose text over a photograph, for example.

A less-expensive ($8690) version of the CJ-10 is available that uses a QuickDraw-based interface, which connects to the Mac's SCSI port. The PostScript interface was faster in all tests except for the Photoshop test, in which it took almost 14 times as long. Why the huge disparity? The PostScript interface uses the laggardly LocalTalk port, which transfers data far more slowly than does SCSI. But the PostScript interface provides better network sharing and generally better output quality.

### The Solid-Ink Alternative

Imagine candle wax dripping and solidifying on a paper tablecloth, and you have the idea behind the other major ink-jet technology: solid ink. Four printers—the Phaser 300i and Phaser IIIPXi from Tektronix, Dataproducts Corporation's Jolt PSe, and the Brother HS-1PS2—use wax-based ink sticks that are melted in the printer's engine. The ink is sprayed onto the page, where it solidifies almost immediately. Like the wax on the paper tablecloth, nearly all of the ink sits on the paper instead of soaking into it.

The solid-ink approach eliminates the wicking problem and works well on plain photocopier bond, card stock, letterhead—anything a laser printer can handle. This versatility has made solid-ink printers—particularly Tektronix's Phaser IIIPXi and Phaser 300i—popular among designers creating packaging comps.

Tektronix has polished solid-ink technology until it glitters. The latest member of its solid-ink line, the $9995 Phaser 300i, is faster and produces better output than the Phaser IIIPXi, which is still available at a reduced price of $6995. The machines are otherwise similar: both are big boxes that accept paper as small as 4 by 6 inches and as large as 12 by 18 inches.

In its premium-quality printing mode, the Phaser 300i earned some of the highest marks from our output-quality jury. In this mode, however, the printer was substantially slower than the fastest thermal-wax machines. In its standard-quality mode, the Phaser 300i did a better job of keeping up with the thermal-wax crowd, but at the expense of output quality. (This tug-of-war between output quality and performance occurred with most of the printers tested.)

Dataproducts' Jolt PSe has been improved somewhat over the Jolt PS we tested last year (see "Ink-Jet," *Macworld,* May 1993). The printer's output is still on the fragile side—fold a page in half, and the ink flakes off along the fold. The printer also requires more maintenance; you have to feed in a special head-cleaning sheet after each power-up. The Jolt PSe was also among the slowest machines tested, and our jury rated its output quality as inferior to that of the Phaser 300i.

Solid-ink technology has some drawbacks that transcend individual models.

# Finding the Best Business Color

| Company | Phone | Product | Imaging Technology | Tested by Macworld Lab | List Price | Standard Ports/ Optional Ports/ All Active |
|---|---|---|---|---|---|---|
| Apple Computer | 408/996-1010, 800/767-2775 | Color StyleWriter Pro | liquid ink-jet | ● | $629 | S/none/NA |
| Brother | 908/356-8880, ext. 4300 | 8rother HS-1PS2 | solid ink-jet | ○ | $8995 | L, P, S/none/● |
| CalComp Systems | 800/225-2667 | Colormaster Plus 6603XF | thermal wax | ● | $5495 | L, P, S/E/● |
| Canon USA | 800/848-4123 | BJC-820 | liquid ink-jet | ● | $2199 | P, SCSI/none/○ |
| | | CJ-10 (PostScript) | liquid ink-jet | ● | $10,990 | L ,P, S/none/● |
| | | CJ-10 (QuickDraw) | liquid ink-jet | ● | $8690 | SCSI/none/NA |
| Dataproducts Corporation | 800/980-0374 | Jolt PSe | solid ink-jet | ● | $5595 | L, P, S/E/● |
| Digital Equipment Corporation | 508/493-5111 | DECcolorwriter 1000 | thermal wax | ● | $3999 | L, P, S/E/● |
| Fargo | 612/941-9470, 800/327-4622 | Primera Color Printer | thermal wax | ○ | $995 | P, S/none/○ |
| General Parametrics | 510/524-3950 | SpectraStar GTx | thermal wax | ● | $4995 | L, P, S/none/● |
| | | SpectraStar GLx | thermal wax | ○ | $3795 | L, P, S/none/● |
| Hewlett-Packard | 800/752-0900 | DeskWriter C | liquid ink-jet | ○ | $485 | L, S/none/● |
| | | DeskWriter 310 | liquid ink-jet | ○ | $379 | L, S/none/● |
| | | DeskWriter 550C | liquid ink-jet | ○ | $599 | L, S/none/● |
| | | DeskWriter 560C | liquid ink-jet | ● | $719 | L, S/none/● |
| | | DeskJet 1200C/PS | liquid ink-jet | ○ | $2749 | L, P/E, T/● |
| Lexmark | 606/232-2000, 800/358-5835 | IBM Color Jetprinter PS4079 | liquid ink-jet | ● | $3199 | L, P, S/none/● |
| NuDesign Engineering | 612/832-5622, 800/762-3531 | NuDesign Color Printer | thermal wax[3] | ● | $1298 | P, S/none/○ |
| QMS | 205/633-4300, 800/523-2696 | ColorScript 210 | thermal wax | ○ | $4595 | L, P, S/E, T/● |
| | | ColorScript 230 | thermal wax | ● | $7335 | L, P, S/E, T/● |
| | | ColorScript Laser 1000 | laser | ● | $9999 | L, P, S/E, T/● |
| Seiko Instruments | 408/922-5800, 800/873-4561 | Personal ColorPoint PSE | thermal wax | ○ | $2999 | L, P, S/none/● |
| | | ColorPoint PSN Model 4 | thermal wax | ○ | $5999 | L, P, S/E/● |
| | | ColorPoint PSN Model 14 | thermal wax | ○ | $8999 | L, P, S/E/● |
| Tektronix | 800/547-8949 | Phaser 200e | thermal wax | ○ | $2995 | L, P, S/none/● |
| | | Phaser 220e | thermal wax | ● | $3995 | L, P, S/TC/● |
| | | Phaser 220i | thermal wax | ● | $5995 | L, P, S/E, TC/● |
| | | Phaser IIIPXi | solid ink-jet | ○ | $6995 | L, P, S/E, TC/● |
| | | Phaser 300i | solid ink-jet | ● | $9995 | L, P, S/E, TC/● |

*● = yes; ○ = no. Technical-support ratings are based on a series of calls made to each company by Macworld staffers (posing as customers) to gauge the accessibility, helpfulness, and accuracy of the company's support technicians. Macworld uses a point system, including bonuses and demerits, to derive the final rating. Ratings are for companies, not individual products, and we call only those companies whose products Macworld Lab tests. E = Ethernet, L = LocalTalk, NA = not applicable, P = parallel, S = serial, SCSI = small computer system interface, T = Token Ring, TC = TCP/IP. [1]PostScript Level 2 optional. [2]600 by 300, black. [3]Also provides dye-sublimation imaging.*

The printers have warm-up times that rival that of a starting pitcher, taking about 20 minutes before their ink sticks are melted.

A more serious drawback is that solid-ink machines produce transparencies that look washed out when projected. That's because the solid beads of ink tend to refract light from the projector. Both Dataproducts and Tektronix sell desktop laminators that apply a second layer of film to counteract this phenomenon, but this adds cost and an extra step to the printing process. The best technology for transparencies remains thermal wax.

## Iron-on Color

Thermal-wax printers' color comes from a roll of plastic film coated with pigmented wax in each of the three process colors (and optionally, black). The plastic is sandwiched between the paper and a print head containing thousands of evenly spaced heating elements. Where an element is hot, it melts a dot of wax, which transfers to the page. After one color's dots are applied, the ink roll advances to the next color.

In the last few years, as dye-sub printers have become cheaper, ink-jet printers have become better, and color lasers have knocked on the door, some people have predicted the demise of thermal-wax technology. But death reports would be premature. Thermal-wax manufacturers have added plain-paper capabilities, and thermal-wax machines were the fastest color printers Macworld Lab tested. Thermal-wax printers also provide unique output options, including media for making iron-on fabric transfers and static-cling signs. (Seiko's machines support the largest selection of offbeat output options.)

Best of all, thermal-wax prices have fallen substantially; Seiko Instruments' Personal ColorPoint PSE, an Editors' Choice in last year's roundup, retails for just $2999, while Tektronix's Phaser 200e lists for $2995 (down from $3695 last year). Fargo's Primera sets a new low at $995, but it's slower than these machines and its 203-dpi output isn't in the same league. The Primera is also sold by NuDesign Engineering as the NuDesign Color Printer for $1298.

Fargo and Seiko have taken a different approach to fending off competing technologies. Both firms offer thermal-wax machines that also operate as dye-sublimation printers (see "Photo-realistic Color Printers," *Macworld*, July 1994). We hoped to test the Seiko Professional ColorPoint PSF Model 14 for this story, but the unit's ship date slipped yet again—proof, perhaps, that creating a machine that straddles both camps isn't easy. I spent some time with a prototype and was impressed with its features and output quality; Seiko says the machine will be available by the time you read this.

Many of the latest printers from Tektronix, Digital Equipment Corporation (DEC), and General Parametrics have borrowed a page from the monochrome laser book, offering resolution higher than the standard 300 dpi. Tektronix's Phaser 220e and Phaser 220i, DEC's DECcolorwriter 1000, and General Parametrics' SpectraStar GTx and SpectraStar GLx provide 600-by-300-dpi output, obtaining the higher resolution on the long axis of the page by advancing the paper in smaller steps. The benefits are the same as with any type of noncontinu-

| RAM (base model/ maximum) | Resolution (in dots per inch) | Imaging Language | SCSI Port for Font Storage | Number of Fonts | Prints on Plain Paper/Provides Manual-Feed Slot | Paper Sizes | Technical Support |
|---|---|---|---|---|---|---|---|
| NA | 360 | QuickDraw | ○ | 64 | ●/○ | A, A4, lgl | not rated |
| 12MB/44MB | 300 | BR-Script Level 2 | ● | 35 | ●/● | A, A3, A4, B, B4, B5, lgl, SB | not rated |
| 8MB/64MB | 300 | PhoenixPage Level 2 | ● | 35 | ●/○ | A, A0, A3, A4, A40, B, B0 | not rated |
| NA | 360 | QuickDraw | ○ | 0 | ●/○ | A, A4, lgl, B, B4 | very good |
| 16MB/16MB | 400 | PostScript Level 2 | ● | 39 | ●/● | A,A4 | |
| 16MB/16MB | 400 | QuickDraw | NA | 0 | ●/● | A,A4 | |
| BMB/12MB | 300 | PostScript Level 2 | ● | 39 | ●/● | A, A4, B5, folio, executive, lgl | very good |
| BMB/BMB | 600 × 300 | PostScript Level 2 | ○ | 17 (39 optional) | ●/● | A | not rated |
| NA | 203 | QuickDraw | ○ | 0 | ○/○ | A, A4 | not rated |
| 10MB/32MB | 600 × 300 | PowerPage Level 2 | ● | 52 | ●/○ | A, A4 | very good |
| BMB/24MB | 600 × 300 | PowerPage Level 2 | ○ | 52 | ●/○ | A, A4 | |
| 64K/64K | 300 | QuickDraw | ○ | 35 | ●/○ | A, A4, executive, lgl | very good |
| 128K/128K | 300 | QuickDraw | ○ | 35 | ●/● | A, A4, executive, lgl | |
| 12BK/12BK | 300 | QuickDraw | ○ | 35 | ●/○ | A, A4, executive, lgl | |
| 4BK/256K | 600 × 300 | QuickDraw[1] | ○ | 35 | ●/○ | A, A4, executive, lgl | |
| 4MB/20MB | 300, color[2] | PostScript Level 2 | ○ | 35 | ●/○ | A, A4, lgl | |
| 4MB/16MB | 360 | PhoenixPage Level 2 | ○ | 35 | ●/○ | A, A3, A4, B, B5 | acceptable |
| 32K/32K | 203 | QuickDraw | ○ | 0 | ○/● | A, A4, long A4 | poor |
| BMB/32MB | 300 | QMS Level 2 | optional | 65 | ●/● | A, A4, lgl | very good |
| 13MB/32MB | 300 | QMS Level 2 | optional | 65 | ●/● | A, A4, B, lgl, SB | |
| 12MB/32MB | 300 | QMS Level 2 | ● | 65 | ○/● | A, A4, lgl | |
| 6MB/22MB | 300 | PhoenixPage Level 1 | ○ | 39 | ●/○ | A, A4, B4, lgl | not rated |
| 4MB/40MB | 300 | PhoenixPage Level 2 | ○ | 39 | ●/○ | A, A4, SA | |
| 12MB/40MB | 300 | PhoenixPage Level 2 | ○ | 39 | ●/○ | A, A3, A4, B, B4, SB | |
| 4MB/BMB | 300 | PostScript Level 2 | ○ | 17 | ●/○ | A, A4 | very good |
| 8MB/BMB | 600 × 300 | PostScript Level 2 | ○ | 17 (39 optional) | ●/○ | A, A4 | |
| 10MB/14MB | 600 × 300 | PostScript Level 2 | ● | 39 | ●/○ | A, A4 | |
| 10MB/22MB | 300 | PostScript Level 2 | ● | 39 | ●/● | 4 × 6 inches to 12 × 1B inches | |
| 10MB/22MB | 300 | PostScript Level 2 | ● | 39 | ●/● | 4 × 6 inches to 12 × 18 inches | |

ous-tone printer: sharper text output and finer image halftones.

All five of these machines use a fast, Sharp-built print engine that can print on plain paper when used with a special ink roll. The ink roll sacrifices the black-ink panel in favor of a primer medium that is applied to areas of the page that will contain ink. The medium smooths the rough surface of plain paper, making it more receptive to the pigmented wax. It's a slick trick, but it's effective only when used with ultrasmooth plain paper such as Hammermill Laserprint or Nekoosa Laser 1000. These printers also have excellent paper-handling features.

On the test track, the Phaser 220i beat its look-alikes and was, in fact, the fastest printer tested—in 300-dpi mode, that is. In 600-by-300-dpi mode, the printer finished second to the Phaser 220e.

The Phaser 220e's output also impressed our jury, which gave it the highest rating. Among thermal-wax machines, the jury was least impressed with the output from the General Parametrics SpectraStar GLx, QMS's ColorScript 230, and CalComp's Colormaster Plus 6603XF. (That last machine has a unique attribute, though: it's the only thermal-wax machine tested that can print on both sides of a sheet of paper.)

## Picking the Winners

Among low-end ink-jets, the Apple Color StyleWriter Pro delivers superior image quality (though inferior text quality) and is more compact. The HP DeskWriter 560C's superior text quality and networking features give it an edge over the Apple unit but by a small margin. If you can live with the Color StyleWriter Pro's approach to networking, and image quality is most important to you, pick the Apple unit.

In the solid-ink world, Tektronix's Phaser 300i wins hands down. The Dataproducts Jolt PSe costs far less, but it can't print tabloid-size pages and its output is on the fragile side. If you need color business documents, consider a plain-paper-capable thermal-wax machine instead.

Tektronix gets the gold in the thermal-wax category, too. Its Phaser 220i is fast, and its 600-by-300-dpi resolution yields the best thermal-wax output quality I've seen. If your budget barks at the $5995 price, consider the $3995 Phaser 220e, which delivers similar quality. **m**

---

Contributing editor JIM HEID has reviewed hundreds of monochrome and color printers, starting with Hewlett-Packard's ThinkJet in 1984. He is also the author and producer of *Macworld Complete Mac Handbook Plus CD*, third edition (IDG Books Worldwide, 1994).

## BUSINESS COLOR PRINTERS

In a complex, broad category of color printers for typical business tasks, we selected winners in three categories.

### Low-End Ink-Jet

**DeskWriter 560C** This printer offers excellent text quality, thanks to its 600-by-300-dpi resolution and HP's Resolution Enhancement Technology. **Company:** Hewlett-Packard. **List price:** $719.

### Solid Ink-Jet

**Phaser 300i** Tektronix made a good thing better when it improved the output quality and performance of its venerable Phaser IIIPXi, which remains available at a reduced price. **Company:** Tektronix. **List price:** $9995.

### Thermal-Wax Transfer and Color Laser

**Phaser 220i** This printer combines plain-paper capabilities, 600-by-300-dpi resolution, and fast performance. **Company:** Tektronix. **List price:** $5995.

*Helpful advice.*

*Stock updates.*

*Downloadable games.*

*Consumer Reports online.*

**Apple Update**

Apple is expected to unve
PowerPC microprocessor ne
the RISC-based Macintoshe
amount of compatibility t

The products will place A
price/performance figures
according to the report.
PowerPC 601 chip: a high
speed 66MHz chip, and an
60MHz.

*The latest.*

*Musical Instrument Digital Interface.*

*Hourly weather updates.*

From: John Na
To: 1 Bruce C
Subject: Changes

John:
How are you do
now I'm afraid
anything import
think about th
several things

*E-mail.*

*Experienced help.*

**Download Program**

OK

*Downloadable programs.*

*Gardening Forum.*

Mac Applications Forum +
Mac Communications Forum
Mac Community Clubhouse F
Mac Developers/Programmers
Mac Entertainment Forum
Mac Hardware Forum +
Mac Multimedia Forum +
Mac New Users/Help Forum
Mac Scripting/HyperCard F
Mac System Forum +
Newton/PIE Forum +
Newton Developers Forum
Vendor Forums

*Over 20 Mac forums.*

Topics Messages

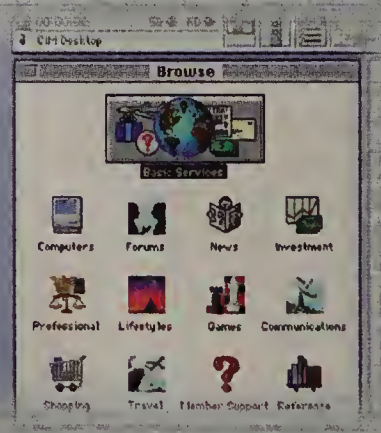
Topic: Quark & Placing F

I could hazard a few guesse
playing with Photo CD. Forum
The resolution of the image
(768x512), though I do not
works.

There are some Photo CD-sav
to give you a thorough expl

*Tips and tricks.*

*Airline reservations.*




*A friendly interface.*

*Desktop publishing assistance.*

*Virus updates.*

*Science Fiction and Fantasy Forum.*

*Shopping.*

*Scuba Forum.*

# YOUR MAC WILL LOVE COMPUSERVE, TOO.

Let CompuServe make your life more exciting, with more to do, try, learn, and be. It's just a mailbox away. For more information about CompuServe, just mail this card, or call **1 800 848-8199.**

Name _____ Company Name _____

Address _____

City, State _____ Zip _____

(_____) _____
Day Phone

(_____) _____
Evening Phone

CompuServe®

Mac World/Aug.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST CLASS PERMIT NO. 407 COLUMBUS, OHIO

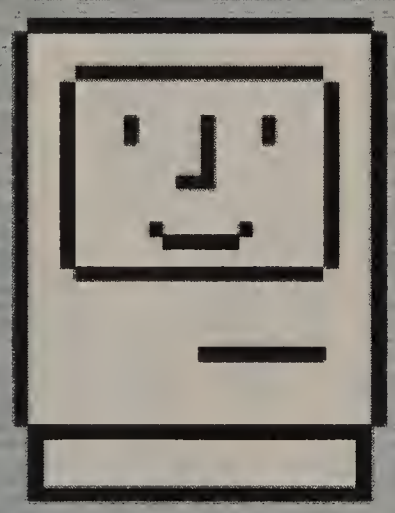
POSTAGE PAID BY ADDRESSEE

**CompuServe®**

NEW MEMBER DEPARTMENT Mac World/Aug.
PO BOX 20961
COLUMBUS OH 43220-9988

Attention Newton Community!
Call 1 800 621-1258 and ask the
Newton Representative about our special
offer for Newton users and developers!

# WHY JOHN NAGY'S MAC LOVES COMPUSERVE.



It's because CompuServe makes John's life so much more exciting.

John talks with friends all over the world about everything from gardening to how to connect his printer. He meets far more, and far more interesting, people than he's ever met before. He shops for clothes, tries software demos, and checks the weather where his sister lives. He even learns new and better ways to use his Mac in CompuServe's Mac forums.

All this excitement makes John happy, and keeps John's Mac busy. Which is why you should contact CompuServe too, at 1 800 848-8199 (614 529-1349 for international inquiries). Because, as we all know, a busy Mac is a happy Mac.

**CompuServe®**

**The information service you won't outgrow.™**

*See us at MacWorld Exposition/Boston, World Trade Center, Exposition Hall, Booth 5228.*

**Circle 66 on reader service card**

EDITED BY JAMES A. MARTIN

# Graphics

THE LATEST IN DESIGN, PUBLISHING, AND PREPRESS

## Two Ways to Make a Big Impression

NEED POSTER-SIZE, FULL-COLOR OUTput? If so, you've got two new options: a Hewlett-Packard ink-jet printer designed for producing in-house, large-format images, and a Raster Graphics electrostatic printer for short-run color jobs from your service bureau.

The HP DesignJet 650/PS, expected to be available in June, is a PostScript Level 2 ink-jet device capable of printing five-color (CMYK, plus a spot color) images up to 3 feet wide and 9 feet long. The DesignJet is aimed at graphic designers who need to quickly produce inexpensive, large-format comps and posters.

The 300-dpi printer comes in two models: D-size (24 inches wide), for $9995; and E-size (36 inches wide), for $11,595. The printer uses special ink-jet cartridges and paper; a 3-by-4-foot print would cost an average of $3 to $5 in consumables, compared with the $50 or more you'd pay a service bureau to output your file.

HP says the DesignJet is ideal for large, short-term color images, such as posters displayed at trade shows. Images printed on the DesignJet's paper stock and inks are designed to last up to a year under low-lighting conditions.

The DesignJet uses an Intel i960CA RISC chip and offers three printing modes: Draft, Final, and Enhanced. In Enhanced mode, HP's new scatter-halftoning rendering helps eliminate banding. The printer comes standard with LocalTalk, EtherTalk, Novell Ethernet, TCP/IP, Centronics parallel and RS-232C serial connectivity, 4MB of memory (upgradable to 68MB using proprietary HP memory), 39 Adobe Type 1 PostScript fonts, and Pantone color reference tables. The DesignJet isn't exactly a desktop printer, though—the 24-inch output model, for instance, weighs 128 pounds and is 43 by 28 by 45 inches.

Meanwhile, Raster Graphics' Digital ColorStation 5400 is able to produce four-color prints up to 52 inches in width and of virtually unlimited length. The ColorStation 5400 is designed for short-run, on-demand color print jobs (on coated stock) of 1 to 200 copies.

*continues on page 119*

## Pedal-to-the-Metal Slide Scanner

POLAROID CORPORATION'S ELECtronic Imaging Systems group has introduced the SprintScan 35, a $2495 color 35mm slide and film scanner that reportedly digitizes images at top resolution (2700 dpi) up to ten times faster than competitive slide scanners.

The SprintScan 35 uses Polaroid's proprietary implementation of Time Delayed Integration, a method by which the scanner's trilinear CCD array passes more quickly over an image yet yields better scanning results. In addition, the device includes such hardware-based features as sharpening, color correction, and image scaling for fast image processing. The SprintScan captures images in a single pass in 30-bit color and automatically samples them to 24-bit.

The SCSI-2–device SprintScan will ship in late July with an Adobe Photoshop plug-in filter for scanning directly into the image-editing application; a Windows version will ship in June. Polaroid, 800/662-8337.—J.A.M.

"TWO WAYS" continued from page 118

The ColorStation 5400, to be available in June, costs $99,500 and up, and is aimed mostly at reprographic shops, imaging service bureaus, and photo labs. Service bureau customers can expect to pay $50 to $80 for a 3-foot-by-4-foot image. The 5400 is a direct-to-print device, meaning CMYK output can be printed directly from a Mac application. The 200-dpi device uses a web-cylinder transport system, which the company says helps produce clean, clear print quality.

Hewlett-Packard, 208/323-2551, 800/354-7622; Raster Graphics, 408/738-7800, 800/441-4788.—J.A.M.

KEVIN CANDLAND

The HP DesignJet 650/PS

# ReadySetGo Prepares for GX

MANHATTAN GRAPHICS Corporation is going against the grain and developing a version of ReadySetGo for the PowerPC and 680X0 architectures that's largely dependent on QuickDraw GX.

The company says that the GX edition of the page-layout program will give users a single imaging and printing architecture—QuickDraw GX—as opposed to relying on QuickDraw for screen rendering and PostScript for output.

To date, however, ReadySetGo's support for GX is unusual among page-layout programs. There are currently no plans to add GX capabilities to QuarkXPress, according to a Quark spokesman. Aldus declined to talk about specific plans for GX support in PageMaker.

ReadySetGo GX version 6.5 (the program's likely name) will offer GX features such as automatic ligatures, optical font alignment, text on a curve, and page-by-page formatting. The program will also let users draw and edit quadratic Bézier curves; one version of the program will support Arabic and Hebrew text, and another version that supports kanji will be available in early 1995. Because it relies on GX for many capabilities, the program will require minimal RAM and hard drive space and will run faster than previous ReadySetGo versions, the company says.

ReadySetGo 6.0, the current version, will continue to be available for users without QuickDraw GX. The GX version will ship later this year. Suggested retail price is $395; upgrades from ReadySetGo versions 5.0 and 6.0 should be about $70. Manhattan Graphics, 914/725-2048, 800/572-6533.—J.A.M.

# New Digital Faces

THE FONT BUREAU, A BOSTON-BASED type foundry, has announced three digital PostScript Type 1 typefaces: Village, a text face originated by Frederic Goudy in 1932; Tasse, designed for display use; and Giza, for text and display. A spokesman said The Font Bureau will offer TrueType GX versions of these faces if there's a demand. The typefaces are sold by FontHaus (800/942-9110) and FontShop (800/363-6687).—J.A.M.

MAC Typeface 12345678

MAC Typeface 123

**MAC Typeface 123**

Three new Font Bureau offerings, in 18-point type. Top: Tasse (regular wide). Middle: Village (regular roman). Bottom: Giza (style One Three).

# Adobe Revamps Licensing, Updates ATM

ADOBE SYSTEMS HAS BEGUN licensing its fonts for use on up to five computers for each individual typeface package purchased. In the past, Adobe's font licenses were for a single printer. But the company says that a growing number of users prefer per-computer licensing agreements, which make it easier to ensure that the users have the appropriate number of licensed copies of a particular typeface.

The new licensing policy doesn't allow you to give a copy of a font to your service bureau. Adobe has unveiled a new pricing policy specifically for service bureaus, however. The policy enables any service company whose primary business is graphical output to pay as little as $10 per typeface (a savings of $15 or more) using Adobe's Type On Call CD-ROM font-unlocking system.

Adobe also announced that the native-mode PowerPC version of Adobe Type Manager is scheduled to ship in July. ATM version 3.8 will automatically install either the PowerPC or 680X0 version of the utility, depending on your Mac's CPU. ATM 3.8 will also include font substitution, as previously available in SuperATM. Separately, Adobe announced that ATM is now included, without charge, in every font package it sells. Adobe Systems, 415/961-4400, 800/833-6687.—J.A.M.

## IN BRIEF

■ **Adobe Tunes In to FM** Adobe Systems plans to license its Frequency Modulation (FM) screening technology, Brilliant Screens, to manufacturers of imagesetters, printers, and presses. Brilliant Screens promises to offer enhanced image detail and significantly reduce moirés. Device manufacturers will make it available to end users. 415/961-4400, 800/833-6687.

■ **Power Mac Update** Canto Software has released native PowerPC versions of its Cumulus image database and Cirrus scanning/image-editing applications. Both programs are available in full-featured and limited-capability versions. Prices vary based on program version and number of users. 415/431-6871, 800/332-2686.

■ **Computer Art Contest** The Art Institute of California is sponsoring the National Computer Art Awards, supposedly the first-ever competition of its kind for American computer artists. The deadline for submissions is August 1, 1994. For more information, send a self-addressed, stamped envelope to the National Computer Art Awards, 1125 Jefferson St., Napa, California, 94559; or call 707/226-1776.

Imagine a high-performance 650hp mower with 10 sets of blades. Welcome to the world of MicroNet. We're reshaping the desktop landscape with storage products and a technical support network designed to increase your productivity. Our 17.3 GB Raven array has displaced the solitary drive. A 200 MB SyQuest has eclipsed the 88. The 1.3 GB optical rivals the speed of a hard disk. And our 32 GB DAT backs up those irreplaceable moments

*Raven Array*

*Optical Drive*

*SyQuest Drive*

*DAT Backup*

IS YOUR EQUIPMENT
UP TO THE TASK?

between conception and completion. So in a world where time is measured in milliseconds and capacity in gigabytes, MicroNet provides productive solutions that can change the way you work. To impact your company's throughput, call your local reseller or 1-800-800-DISK.

MicroNet

All Trademarks, Registered Trademarks and Logos are of their respective holders.

Circle 139 on reader service card

# Expert Graphics

## GRAPHICS PROFESSIONALS SHARE THEIR SECRETS

by Cathy Abes

**Artist:** Daniel Pelavin is an illustrator and typographic designer based in New York City who began working regularly on the Mac two years ago. Pelavin's typeface ITC Anna was recently added to the Adobe Type Library.

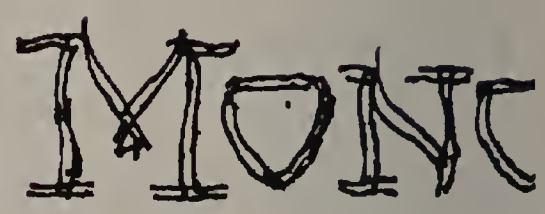
**How It Was Done:** Pelavin began designing the typeface he calls Monograph by sketching the letters on paper. In Illustrator, Pelavin created the skeleton of each character out of simple strokes. Monograph has a fairly uniform stroke weight; its uppercase and lowercase letters differ in weight only slightly to maintain a consistent appearance.

To create Monograph's bold characters, Pelavin doubled the size of the original letters and scaled up their line weight, then reduced them back down to normal size without scaling down the weight. Then he manually fine-tuned some of the letters, such as shortening the loop in the uppercase *C* and shortening the serifs on the uppercase *F* and *T*.

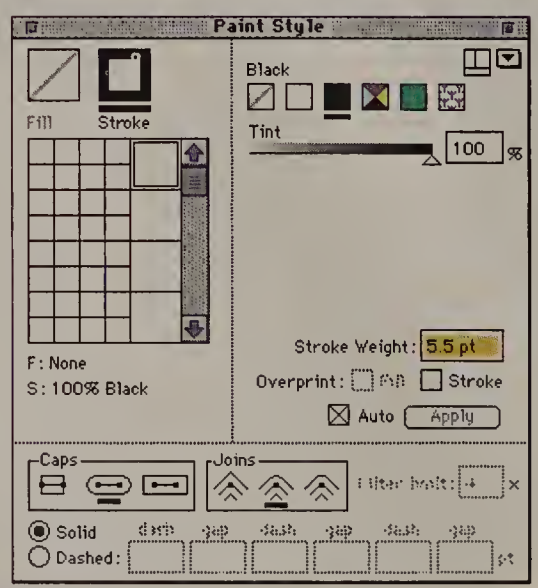
Although many fonts include stock character sets for unusual characters such as ligatures and symbols, Pelavin elected not to follow this route. Instead he designed each of Monograph's special characters from scratch.

After designing the complete 223-character set—including foreign-accented letters, symbols, and punctuation—Pelavin's next step was to convert the strokes to outlines so the characters would be ready for importing into the font-creation program Fontographer. While it includes many of the tools found in Illustrator, Fontographer also contains features specifically for controlling a typeface's width and spacing, or kerning.

Finally, after Pelavin had finished testing and adjusting the letters for proper spacing and optimum readability, he was ready to generate the final Type 1 PostScript font in Fontographer's Generate Font Files window. This produced an outline font that would output at the best available resolution on any PostScript device, and a bitmap font for 72-dpi screen display. m



**1** Some letters from the designer's original sketch. Pelavin envisioned a font whose letterforms would have subtly curved strokes and whose round areas—like the o and the bowl of the lowercase *g* and *e*—would be triangular.



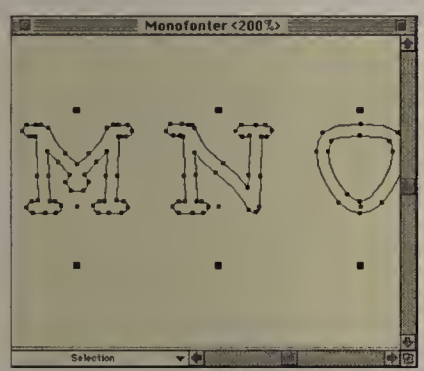
**2** Although the characters have no weight when displayed in Illustrator's Artwork mode, the underlying architecture of each letterform is still apparent.

**3** In the Paint Style window (Object menu), you define attributes such as stroke weight, caps (ends of strokes), and joins (corners).

### THE TOOLS

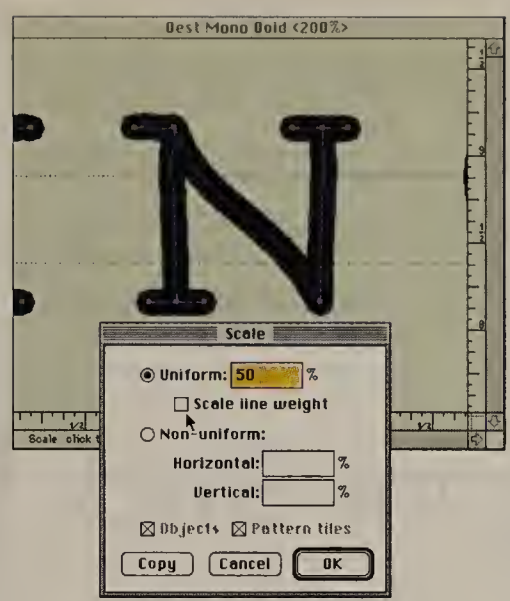
**Hardware:** Mac IIci with 20MB of RAM and 240MB internal hard drive; APS 128MB magneto-optical drive; Sony 20-inch Trinitron color display; Radius PrecisionColor 24x 24-bit accelerated graphics card; Logitech ScanMan hand scanner; Hewlett-Packard DeskJet 1200C/PS color ink-jet printer; Mouse Systems Little Mouse ADB optical mouse.

**Software:** Adobe Illustrator 5.0.1; Altsys Fontographer 4.0.3.

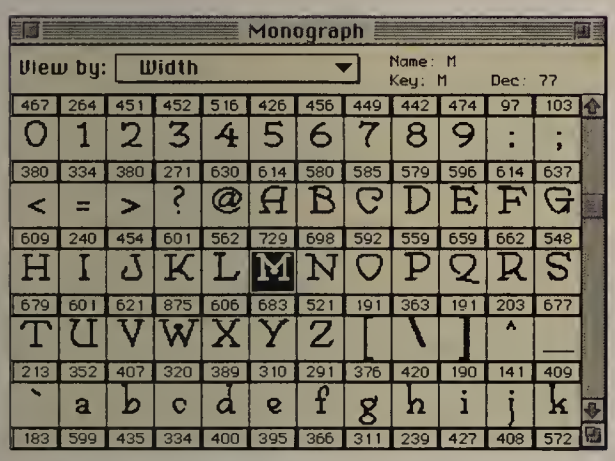


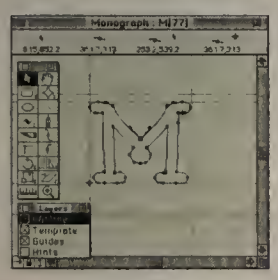

**4** Using the paths that make up the letters' skeletons, Pelavin applied the stroke weight and viewed the resulting letter weights in Preview mode.

**5** To convert the strokes to outlines, Pelavin used the Outline Stroked Path filter (under the Filter menu in the Objects submenu) and the Unite filter to make a single shape out of characters—such as the *M* and the *N*—that were composed of multiple paths.



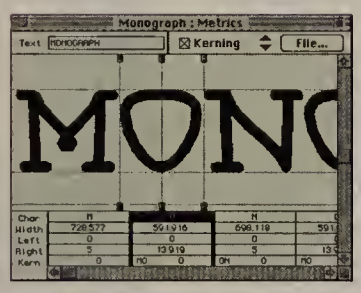

**6** To create Monograph's bold characters, Pelavin scaled all the letters 200 percent with the Scale line weight option checked in the Scale dialog box to uniformly double the weight of all the lines. Then, without deselecting, he unchecked the option and scaled the lines back down 50 percent, which brought the letters back to their original size but kept the line weights doubled.



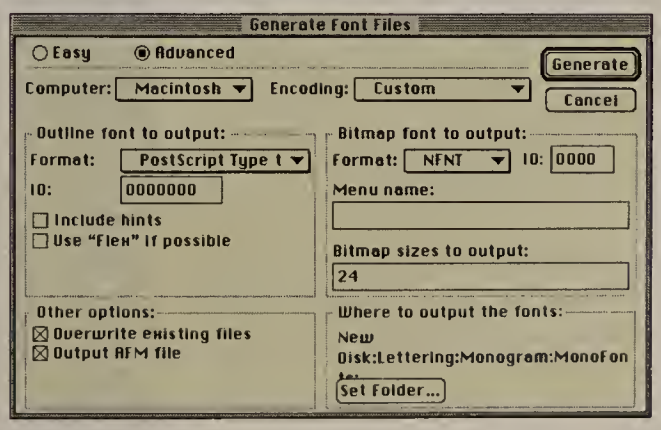



**7** He brought the letters one by one into Fontographer by selecting the character, option-copying it to create a PostScript version that Fontographer could read, and pasting it into its own separate Character window.

**8** Fontographer's font window, which lets you view all characters simultaneously, can be configured to display such information as character widths, left and right sidebearings (the amount of space allotted for the width of each character, including the space to the left and right of it), and keystroke (the key the letter is mapped to).




**9** In the Metrics window, Pelavin set the kerning specifications to control the spacing between certain pairs of letters—such as the capital *T* and the lowercase o—for better readability and aesthetics.




**10** With everything closed except the Font window, Pelavin chose Fontographer's Generate Font Files command (File menu), setting parameters such as output formats and ID, which facilitates font caching in PostScript printers (so the font will remain in the printer's memory and not be flushed after printing).

ONLINE STOCK-PHOTOGRAPHY SERVICES PROMISE TO MAKE the process of searching for and obtaining images faster, easier, and less expensive. The idea is to connect via modem to a central database with thousands of images from a variety of sources. Once you are online, you can use keywords or phrases to look for the types of images you want, then download candidates as low-resolution thumbnails. When you decide on an image, you can go back online and download a high-resolution version for use in your layout.

# Searching for Stock Photos Online

## Macworld puts stock-photo services to the test

Again, that's the *idea* behind online image access. To find out how much of it is real, I put the current crop of electronic-image services—Comstock On-Line Access, PressLink, and Kodak Picture Exchange—to the test to see if they really do save money, time, and headaches. Among the things I looked for: How easy is the software to learn and use? How comprehensive are the search capabilities? How usable are the images that you download? And how much money will you really spend using these systems?

ONLINE

SPECIAL REPORT

### Comstock On-Line Access

Since it has no electronic search capability, Comstock's On-Line Access—which gives you access to 15,000 of Comstock's most popular images—provides a rather piecemeal approach to digital delivery.

You must search for images by flipping through the hefty, printed Comstock catalog included in On-Line Access's sign-up package. When you find the images you want, you dial Comstock's toll-free number using a modem, type in the catalog numbers for the images you want, then download the low-resolution proofs from Comstock's electronic bulletin board. The proofs (about 500K) are compressed with Kodak's ColorSqueeze utility to about 50K, so each proof takes only a few minutes to download. Once the image is on your hard drive and you've signed off, you can use ColorSqueeze to decompress the digital photo to its original size—about 5 inches by 7 inches at 72 dots per inch.

On-Line Access is quick, trouble-free, and inexpensive. A typical, ten-minute online session in which you download three images costs between $25 and $40, depending on the photos you choose. Comstock also offers a scanning service: if you want an image that has not yet been posted on the bulletin board, Comstock will scan and upload a low-resolution version of the photo for you. To receive this service, however, you can expect to tack on Comstock's standard research fee of $60.

by Jim Benson

*Illustration by Michael Sean*

Despite its name, On-Line Access is not a full-featured online service. You cannot search online, you must negotiate usage fees for an image over the phone, and you still need to obtain transparencies. But if it is 10 p.m. and your preliminary layout is due tomorrow morning, On-Line Access could be your ace in the hole.

**Charges**: Sign-up fee $99; $2.85 per log-on; 85 cents per minute of usage; research fee for posting new images $60; design proofs $4.50 to $9 each. **Phone**: 212/353-8600, 800/225-2727.

### PressLink

Many small-to-midsize newspapers and magazines can't afford satellite hookups to get a steady stream of timely images. Instead, they're turning to a cost-effective alternative: PressLink, a Knight-Ridder subsidiary.

At press time, PressLink offered more than 150,000 images from some 14 media giants, including Times-Mirror, Reuters, Associated Press, United Press International, and Gannett. With PressLink, you can find photos of political and entertainment figures, snapshots of last night's all-star baseball game, and even Aldus FreeHand infographics from current issues of *Time* and *USA Today*. The trick, as always, is finding the images you want—and PressLink doesn't make it particularly easy.

Once you've dialed the local-access phone number and entered your password, PressLink presents you with a screen full of folders, each one representing a particular news service. Because the services try to protect how their images are used, there are no links between them. If you're looking for a photo of last week's hurricane in Alabama, for instance, you have to spend several minutes opening a dozen folders and searching within each one to find the right image.

In addition, the image providers offer only a handful of keywords to identify images. This wouldn't be too irksome, except that you can't whittle down your choices by viewing thumbnails

online—you can only read an image's caption. To view thumbnails, you must download them to a folder on your hard drive; each image is compressed to between 8K and 10K using proprietary software and takes 10 to 15 seconds to download. Once they're on your hard drive, you view the thumbnails by double-clicking on a thumbnail file's icon to automatically launch the PressLink Access utility. When you find an image you like, you then log back on to PressLink to retrieve the JPEG-compressed high-resolution version of the image and download it to your hard drive. Each image is 140K to 250K in size and takes between 5 and 10 minutes to download.

**High-quality photos don't have to cost a bundle**

The good news is that your final, decompressed color image is a healthy 2MB to 4MB in size. Even better, most of the content providers charge little for the images and allow multiple uses over a fixed period of time. UPI, for instance, offers newspapers unlimited use of photos for 90 days for a mere $25 per image. Add that to PressLink's reasonable hourly online rate and download charge, and you'll find that using high-quality photos in your publication doesn't have to cost a bundle.

**Charges:** Sign-up fee (software included) $50; monthly service fee $9.95; $15.95 per hour of usage; all downloaded information costs $.0575 per thousand characters; content providers charge usage fees of $25 and up for high-resolution images. **Phone:** 703/758-1740.

## Kodak Picture Exchange

At press time, 17 stock-photo houses—among them FPG, PhotoBank, and ProFiles West—had contributed nearly 100,000 images to Kodak Picture Exchange (KPX). But unlike those on PressLink, every KPX image (the majority are in Kodak's Photo CD format) carries a detailed description that follows Kodak's specifications. This makes it possible to search all of the content providers' images simultaneously.

Of the three services I tested, KPX comes closest to delivering on the promise of online image access. The software is easy to learn; I was able to perform simple searches and download images without cracking open the manual. The service is fast (KPX supports 9.6-Kbps, 14.4-Kbps, and ISDN transmissions) and powerful—even complex searches showed the number of hits within a few seconds, and I could quickly narrow my search criteria for a manageable range of images.

Here's a typical session. After launching the program—which automatically dials KPX's toll-free number—and choosing from a list of image providers (you can select them all if you want), you're ready to start searching. For a simple search, you can type a few keywords, such as *children and dogs;* within a few seconds you'll see the number of images found that fit your request. (The above search yielded 133 hits.)

You can then choose how many thumbnail images you want to see and at what sizes—small (32 by 48 pixels), medium (64 by 96 pixels), or large (128 by 192 pixels, the same as the smallest Photo CD resolution). The program automatically downloads all thumbnails to your hard drive. For maximum speed (but minimal visual appeal), you can also download only the text description of an image.

KPX makes it relatively easy to perform more complicated searches, too. In the children-and-dogs example, I narrowed my search to include only images of a boy and a dog, in vertical format, with space at the top for a headline; using those criteria, my search yielded nine images. I could then pick from those images and download a 256-by-384-pixel design proof.

Once you've made your decision, you can order an image

# Taking Stock of CDs

Thanks to the growing ranks of CD-ROM–drive owners, a new means of distributing images is gaining popularity—high-resolution stock-photo CDs. Unlike the catalog CDs published by such stock agencies as FPG International—which typically contain thousands of low-resolution (usually 72-dpi) images for on-screen browsing and use in comps—CD photo collections often contain between 60 and 400 electronic images at 300-dpi resolution that are suitable for printing at sizes ranging from 5 inches by 7 inches to 15 inches by 10 inches at a 150-line screen. (All the CDs reviewed here also offer low-resolution versions of the images for browsing and multimedia use.)

Unlike using a stock-photo agency, where you pay for every use of the image you choose, purchasing a stock-photo CD generally enables you to use any image on the disc as many times as you like, without additional charges.

I evaluated more than 50 high-resolution stock-photo CDs, keeping an eye toward image quality as well as aesthetics. From that pile, the following three multiple-disc, wide-ranging image collections and three single-disc, general-purpose collections were standouts.

## Multiple-Disc Collections

COREL PROFESSIONAL PHOTOS Easily the largest collection of high-resolution images on CD, the Corel Professional Photos series offers more than 100 specific categories—one category per disc—to choose from. Most of the CDs deal with travel, animals, or plants, although the collection is expanding to include subjects such as law, business, and residential interiors. Most images have noticeable imperfections, and more of these photographs need color adjustment than on the other discs I reviewed. But with 100 Photo CD–formatted images on each $49.95 disc, I can't complain. Corel, 613/728-3733, 800/772-6735.

DIGITAL STOCK'S PROFESSIONAL SERIES Excellent color balance, superior compositions, and only an occasional scanning imperfection characterize this collection of 20 CDs (100 images per disc). Digital Stock CDs cover the breadth of images; among the disc categories are Active Lifestyles and Buildings and Structures. Included in the collection is a Signature Series; each disc highlights the works of a particular photographer. All Digital Stock images are in Photo CD format. Each disc is $250 (10 percent discount for 5 to 9 discs; 15 percent for 10 or more; Signature Series discs are $350 each). Digital Stock, 619/794-4040, 800/545-4514.

PHOTODISC Like Digital Stock's, PhotoDisc's images cover the gamut of subject matter and are well chosen and nicely framed. You get a greater quantity of images on a PhotoDisc CD—most have 336 photos—than you do with Photo CD–formatted discs, but the PhotoDisc images are slightly smaller. There are currently 13 discs in the series; volumes 1 and 2 have too many scanning imperfections and dark midtones, but a PhotoDisc company representative said that rescanning those images is a top priority and that there will be a nominal upgrade charge for anyone who already owns the volumes. PhotoDisc images are compressed via JPEG; each disc contains between 111 and 409 images and costs $299 (except for volume 3, which goes for $199). PhotoDisc, 206/441-9355, 800/528-3472.

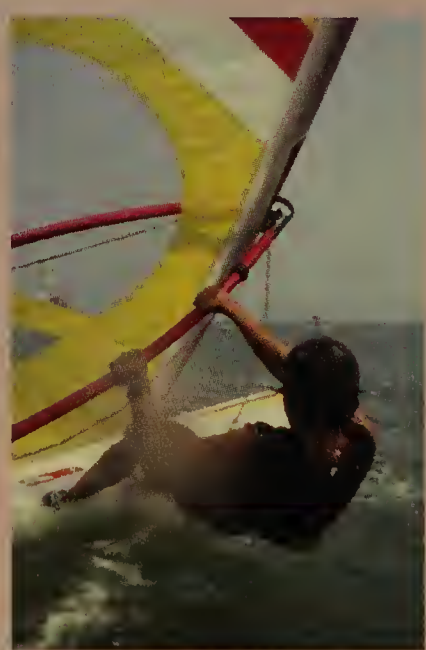
## Single-Disc Collections

COLORBYTES SAMPLERS ONE AND TWO Although a bit heavy with nature shots, these two general-purpose discs have the best-scanned images of any I reviewed. They offer excellent color balance and large images sizes—several megabytes larger than even the maximum size supported by the Photo CD format. One annoying restriction: you must include a credit line for the photographer if you use any part of a photo. Images are compressed in JPEG format; each disc contains 100 images and costs $399 (discounted indefinitely to $249). ColorBytes, 303/989-9205, 800/825-2656.

ELECTRIC IRIS SIGNATURE SERIES, VOL. 1 NO. 1 This is perhaps the most wide-ranging single-disc collection of stock photos around. The $129 disc offers 60 RGB TIFF images from photographer Chris Grajczyk; they include both the expected (sunsets and children) and the unexpected (a body in a morgue). The images are nicely composed but grainy, with colors a bit oversaturated. Digital Knowledge, 612/595-0801, 800/279-6099.

Stock photos from Electric Iris Signature Series (top) and the PhotoDisc Series (bottom).

Left to right: ColorBytes; Corel Professional Photos; Digital Stock.



online. But here's where KPX disappoints by regressing to the timeworn tradition of phone negotiation. After you specify how you'll use the image (for example, book cover, 10,000 print run, and USA only), KPX electronically routes your order to the appropriate image provider, and a representative of the provider calls you with a price. It seems logical that prices for some images might need to be negotiated; but if I'm browsing online, I like to have an idea right then and there what a particular image will cost. After all, price can be a big part of my decision.

Another caveat, particularly for those on a tight deadline, is that KPX currently can't download high-resolution files via modem. So if you need the image today, you're out of luck. You can receive an image on a Photo CD or transparency via next-day air delivery, however, and the company says that a future version of KPX will let you download high-resolution files.

KPX seems pricey—the sign-up fee alone is $399—but if you frequently request stock photos from a number of agencies, you could realize substantial savings in the long run. If you were to make search requests from four stock houses, for instance, chances are that each agency would charge you a $60 research fee—a total of $240. Add to that, $30 in round-trip, rush airfare charges for each stock-house mailing, and that's another $120—for a grand total of $360. Deduct $60 as a rebate from the agency through which you eventually license an image, and you've still paid $300 just to find the image you want.

Using KPX, a novice can easily search and download 50 thumbnails from a variety of image providers in 30 minutes; experienced users will need only half that time. That translates to research costs of between $21.25 and $42.50, based on KPX's $85-per-hour online usage fee. Throw in $30 for a typical design proof and another $30 for round-trip transparency or Photo CD delivery and return, and you're still at around $100 per image (not including your sign-up fee).

**Charges**: Sign-up fee (includes software and two hours of free usage) $399; $85 per hour of usage; design-proof download fees $9 to $50. **Phone**: 716/473-7300, 800/579-8737.

## More to Come

By the time you read this, Picture Network International, or PNI (703/558-7860), is expected to go online with Seymour, a direct competitor to KPX aimed at designers, ad agencies, book publishers, newspapers, magazines, and multimedia producers. At press time, 14 providers have supplied the system with images, and as many as 15 more are expected by year's end.

Seymour will sport a snazzy interface and let you search by natural-language phrases (such as *three executives talking in front of a building*) instead of keywords. Thumbnails and design proofs will come in TIFF format, proofs will be as large as 700K (591 by 394 pixels), and the system will support modem speeds between 9.6 Kbps and 28.8 Kbps.

With Seymour you'll be able to get the exact price of any image (based on your usage), order it, and obtain a high-resolution version by downloading a Photo CD file. (The maximum Photo CD image size is 2048 by 3072 pixels.) If you prefer, PNI will also send the image on a Photo CD or SyQuest cartridge, or as a transparency.

Meanwhile, Microsoft chairman Bill Gates's search for images to use on the HDTV screens in his new home has unfolded into a new company, Continuum Productions Corporation (206/641-4505, 800/677-4172). Continuum's mission is to develop a digital archive of multimedia content. At this point in its evolution, the company is focusing on licensing and obtaining still images from photographers, museums, libraries, the public domain, and private archives and institutions. Images are being scanned at HDTV resolution (2000 by 3000 pixels), cataloged, and assigned keywords. The company also plans to develop a visual online navigation system. Although Continuum is currently providing images to producers of multimedia titles, by the time you read this the company will be making images available online to other users as well.

## Picturing the Future

We're moving toward a scenario in which art directors never touch an actual transparency from a stock house. In fact, if you use KPX, it's quite possible to accomplish that feat today. By the end of the decade, online image databases will have millions of images cataloged, and using them will likely become de rigueur.

So why aren't the visionary systems reviewed in this article going great guns today? (The largest of them, PressLink, boasted a mere 3000 subscribers at press time.) One reason is that they're relatively new, but a bigger obstacle is technophobia: say the word *modem* to many designers, and their eyes glaze over—that is, until they actually use one for an online joyride. Then they're hooked.

If you frequently use traditional stock-photo agencies, give their online counterparts a whirl. If you like Comstock's images and use them frequently, you should consider signing up with On-Line Access. If you prefer to shop at a number of stock houses, by all means try out KPX. And if you need low-cost images of current events, PressLink should fill the bill. These services—and others coming down the pike—are making it easier and cheaper than ever to load your Mac with the images you need. **m**

**Two Stock Services** It pays to be specific when you search on Kodak Picture Exchange (top). A request for images with the keyword *Mardi Gras* was rewarded with 22 hits (some of which are shown here), but only half of the images were actually of Carnival; the others were generic New Orleans scenes. Typing *Mardi Gras and costume* whittled the number of hits to 6. Seymour (bottom), from Picture Network International, will have the sharpest-looking, easiest-to-navigate interface of any online stock-image service. You can easily view a wealth of information—such as image orientation and photographic attributes—about a particular image. Seymour should be online by the time you read this.

Designer/writer JIM BENSON is coauthor, with Cher Threinen Pendarvis, of the upcoming *The Painter WOW! Book* (Peachpit Press).

EDITED BY DAN LITTMAN

# At Work

THE LATEST TOOLS FOR BUSINESS COMPUTING

## FileMaker Goes Client/Server

CLARIS IS DEVELOPING A new version of FileMaker designed to make sharing FileMaker databases across a network viable.

FileMaker Pro Server will run on AppleTalk networks and be able to drive databases created in FileMaker Pro 2.0 or 2.1. The server version will open up to 16 databases at once, and juggle tasks such as searching or sorting by interrupting one task to start another and threading multiple tasks. It will run on 680X0 systems, or in native mode on Power Macs. FileMaker Pro Server will list for $1499 and should ship in July.

Claris is also developing a run-time engine that can be incorporated in FileMaker databases. For commercial-application developers, there is no license fee for distributing the run-time engine; the cost for in-house developers will vary based on quantity. The run-time will be sold as part of FileMaker Solutions Development Kit, a CD-ROM that will include FileMaker tips and predesigned buttons. It should ship in July for $499 and will be available only to members of Claris's FileMaker developers organization, Claris Solutions Alliance. Claris, 408/727-8227.—D.L.

GORDON STUDER

## The Independent Invoice

MYSOFTWARE IS SHIPPING MyAdvancedInvoices, the Mac's first stand-alone invoicing package.

MyAdvancedInvoices can generate a bid and convert it to an invoice when the bid is accepted. The program includes a number of preset reports; it can create summary and detail reports of accounts receivable, customers, and invoices (plus sales-tax, receipts, and trend reports). You can select a date range for reports; change field names; sort data based on any field; add a logo to your invoices; and print a message on each invoice. The program allows you to enter a single discount rate for all customers. It lacks calculations in its searching and reporting; for example, it is not possible to retrieve all overdue invoices over $1000.

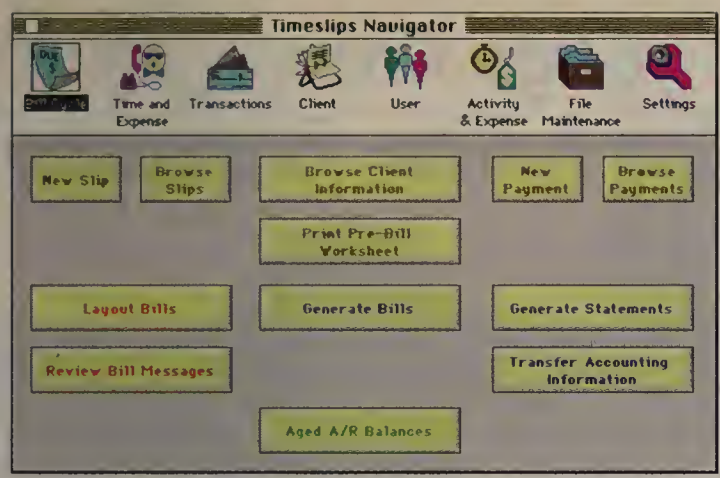
MyAdvancedInvoices is also designed to transfer data to MySoftware's other Macintosh products—MyDatabase, MyAdvancedDatabase, MyMailList, and MyAdvancedMailList—making it possible to generate collection letters, direct-mail pieces, and so on. Version 1.0 does not communicate with software from other vendors, but MySoftware plans to add that capability to an upgrade.

The list price for MyAdvancedInvoices is $59.95. MySoftware, 415/325-9383, 800/325-3508.—D.L.

## Timeslips Retooled

TIMESLIPS CORPORATION IS DEVELOPING version 2.2 of Timeslips III, time-billing software for professionals who charge by the hour. The new version will be able to manage complex billing rates and will sport a redesigned and more accessible interface.

Timeslips 2.2 will support a matrix of billing rates to charge different hourly




Among the additions to the new version of Timeslips is a navigation window that provides you with one-click access to all of the various parts of the program.

rates based on who in an office does the work, who the client is, and what activity is performed. The new version will also include a navigation tool that simplifies gaining access to common functions. Version 2.2 is expected to ship in August for $299.95. At the same time, Timeslips will ship an upgrade to its PowerBook time-billing program, LapTrack; the new version, 1.1, has a refined interface. LapTrack will list for $79.95. Timeslips also sells links to several popular accounting packages, which can eliminate having to reenter data in your accounting package.

TimeSlips is also working on a time-billing product for the Newton, but its name, price, and ship date were not set at press time. Timeslips, 508/768-6100.
—JOANNA PEARLSTEIN

# Mac Automates Credit Card Sales

HAS YOUR BUSINESS BEEN BURNED because verifying credit card sales manually seemed like too much trouble? Do you need to automate the whole point-of-sale process? MacAuthorize, which is being upgraded to version 2.0, verifies credit card transactions over bank-card networks and then deposits the sale in your account—without leaving your sales or customer database.

Salespeople feed credit card information into MacAuthorize with a credit card reader (MacAuthorize works with readers from TPS Electronics and Time-Keeping Systems) or by keying the information into the Mac using a data entry screen that resembles a credit card slip—the kind stores run through those clunky imprinters. MacAuthorize then dials the bank-card network for approval. Depending on the network used, funds are deposited after each sale or at the close of the business day. Version 2.0 automatically deducts the bank discount on each sale (the fee charged for using the network, generally between 1 and 5 percent). Using Apple events, you can access MacAuthorize from within databases such as 4D and FileMaker Pro.

Version 2.0 should ship before you read this. Its price was not set at press time, but it will be more than the $315 cost of the current version. Free demo versions of MacAuthorize are available from online services including America Online and CompuServe, or from Tellan Software at 408/274-1110 or 800/483-5526.—SUZANNE COURTEAU

MacAuthorize is software that verifies credit card charges for telemarketing or for a point-of-sale system like this one.

# OCR That Thinks?

LIGATURE SOFTWARE WANTS TO ADD some brains to optical character recognition with CharacterEyes, an omnifont OCR program that uses neural network technology to improve speed and recognition accuracy.

Like all omnifont OCR programs, CharacterEyes identifies a character's major features, such as crosses and loops, and tries to match them to the features of common fonts. To find matches, CharacterEyes uses neural network technology, which works much like the brain, with its many connected neurons, to interpret ambiguous data such as the dot pattern of faxed text. Ligature says the neural net improves the program's success with difficult-to-read fonts and poor-quality documents. You can train CharacterEyes to recognize fonts that its omnifont engine can't decipher.

Ligature claims CharacterEyes achieves a real-world recognition rate of 200 characters per second with 99.6 percent accuracy. Additionally, CharacterEyes retains document attributes such as columns and tables, and the program can batch-process stored TIFF files, check the spelling of text, and export recognized text in Microsoft Word and WordPerfect format. It incorporates Hewlett-Packard's AccuPage technology and supports most major flatbed scanners. CharacterEyes lists for $695. Ligature Software, 617/272-3085.—JIM FEELEY

## IN BRIEF

■ **Great Plains' Server Strategy** Great Plains is developing a client/server engine for its Dynamics accounting series. To be called Dynamics C/S+, the server will require a TCP network and will run on Power Macs, as well as on Windows machines and Unix-based minicomputers from Sun, Hewlett-Packard, and IBM. It should ship this fall; pricing will depend on the number of users, ranging from $5000 for eight users up to $40,000. C/S+ is being developed to work with version 2.0 of the Dynamics modules, which should be shipping when you read this; pricing depends on module. 701/281-0550, 800/456-0025.

■ **U.S. Phone Book on CD-ROM** Digital Directory Assistance is shipping PhoneDisc, three versions of CD-ROMs containing U.S. telephone numbers. The $79 PhoneDisc Residential has 81 million listings that include name, phone, and address; the $79 PhoneDisc Business has company name, address, phone, and Standard Industrial Codes (SIC) for 9.5 million businesses; and the $249 PhoneDisc Reverse includes residential and business listings and can search by name or phone number. 800/284-8353.

SPECULAR

# COLLAGE™

## The Image Composition Tool for Adobe Photoshop™

"◆◆◆◆"

"A valuable tool that should be on the shelf of anyone who manipulates images on the Macintosh."

MacWEEK, January 24, 1994

Specular Collage lets you quickly combine high-res images, without using a lot of RAM. Each image is a separate object—even after it's been blended with others. Layout images with the convenience of rulers, guides, image grouping and layers. Enhance your composition with a rich selection of effects such as transparency, automatic drop shadows, feathering, and Photoshop filters. Anything you do in Collage can be changed at any time, giving you total creative freedom!

SPECULAR

# TEXTURESCAPE™

SPECIAL PRICE $149!

## Design an infinite variety of textures for print, video, & multimedia.

Design the exact texture you want, or one you've never imagined possible! TextureScape gives you the control to design detailed and rich textures, while freeing you to play with color, light, and motion. TextureScape's files take up little disk space (under 30K each), yet textures can be rendered at any size or resolution needed.

TextureScape can also morph between textures! Compose a QuickTime movie of a marble background morphing into your logo. Achieve astonishing effects for your next presentation, video, or multimedia project.

*An unlimited collection of textures... for less than the cost of one CD-ROM.*

**CALL SPECULAR INTERNATIONAL AT 1-800-433-SPEC**

Specular Collage™, Specular TextureScape™, and the Specular International logo are trademarks of Specular International, Ltd. Adobe Photoshop™ is a trademark of Adobe Systems, Inc. Macintosh® is a registered trademark of Apple Computer, Inc.
Collage Art by Joseph Kelter / Bad Cat Design, Philadelphia, PA. © 1994Specular International. All rights reserved.

**Circle 41 on reader service card**

BY JIM HEID

# Working Smart

## Mac-Integrated Telephony

DOES PLUGGING YOUR MAC INTO THE telephone grid make you think only of modems and fax modems? Macs can reach out and touch more than just fax machines and other computers. With the right add-ons, a Mac can dial customers in your contact database and leave them a message; a Mac can also be the hub of a voice-mail system, or of an automated fax-back system, which lets your customers dial in and get product brochures, technical updates, horoscopes, or whatever, sent to their fax machines.

Telephony is a hot trend in computing, and Apple is actively involved in it. Besides building telephony capabilities into the AV and Power Macs, Apple is enhancing the Mac's system software with support for third-party telephony software and hardware. While many of Apple's plans are still on the drawing board, here's a look at some useful ways a Mac can tie up a telephone line today.

### Dial the Number

Once you have entered a phone number into a database, an E-mail message, a text document, or anywhere else, why should you have to dial it manually? Automatic phone-dialing can save your fingers from unnecessary walking.

There are a few routes to autodialing. Many personal information managers (such as Aldus TouchBase Pro) can dial using your Mac's modem, and you simply pick up the phone before the phone on the other end starts to ring. This scheme has several flaws. For one, it assumes that your modem and telephone use the same phone line—unlikely in any business employing more than one person.

Many programs can issue the tones needed to dial as you hold the telephone handset up to the Mac's speaker. But in my experience, this method works poorly—too many wrong numbers and incomplete calls. And, of course, you can't dial this way at all with phone systems that require pulsed dialing.

(To test the waters of autodialing, QuicKeys owners can take a look at the Phone Dialer extension. To find Phone Dialer, pull down the QuicKeys Extensions submenu, then the Network and Device Tools submenu.)

A better way to dial is to hook up an autodialing box between the Mac and a telephone. I tested two: Sophisticated Circuits' Desktop Dialer and Advanced Software's TurboDialer. Each has good and bad points. The TurboDialer connects to the Mac's sound-output jack, blocking the port for external speakers. The Desktop Dialer connects to the Apple Desktop Bus (ADB) along with your mouse and keyboard—a much more flexible scheme.

The TurboDialer can dial a number as soon as you select one, but the Desktop Dialer requires you to copy the number to the Clipboard, which adds a step to the dialing routine and replaces the Clipboard's contents. But to its credit, the Desktop Dialer can be driven by any program that can send Apple events, such as Claris's FileMaker Pro or Apple's HyperCard. Desktop Dialer also includes a bare-bones address-book program that stores up to 20 names and addresses. In all, it's the better of the two dialers, and most contact managers and other dialing-aware programs support it directly.

Area codes and long-distance access codes can be a problem. You want an autodialing program to dial the codes for long-distance calls but not for local ones. How does the program know which is which? Both dialers use a simple scheme, which begins with your entering the local area code in a setup dialog box. When you go to dial a number, the dialer's software checks the number's area code and doesn't dial it if it matches the area code in the setup dialog.

Both dialers also let you specify prefixes for accessing outside lines or long-distance services; you can insert a pause between the prefix and the number by typing a comma after the prefix. Both dialers also support the suffixes—your calling-card number—that many long-distance companies require.

### Plug into the Grid

Apple is pushing telephony by building GeoPort connectors into the AV Macs and Power Macs. The GeoPort promises to do for telephony what LocalTalk did for networking: make the hardware connections easy and economical.

The AV and Power Macs have enough processing horsepower to perform the tasks of a high-speed modem or fax modem, so they need only a hardware interface to the telephone lines. That's where the Apple GeoPort Adapter comes in—it's a simple interface box that plugs into the GeoPort and connects the Macintosh to analog phone lines (the

*continues*

"FirstClass Outperforms Competitors Easily" BYTE Magazine 09/93

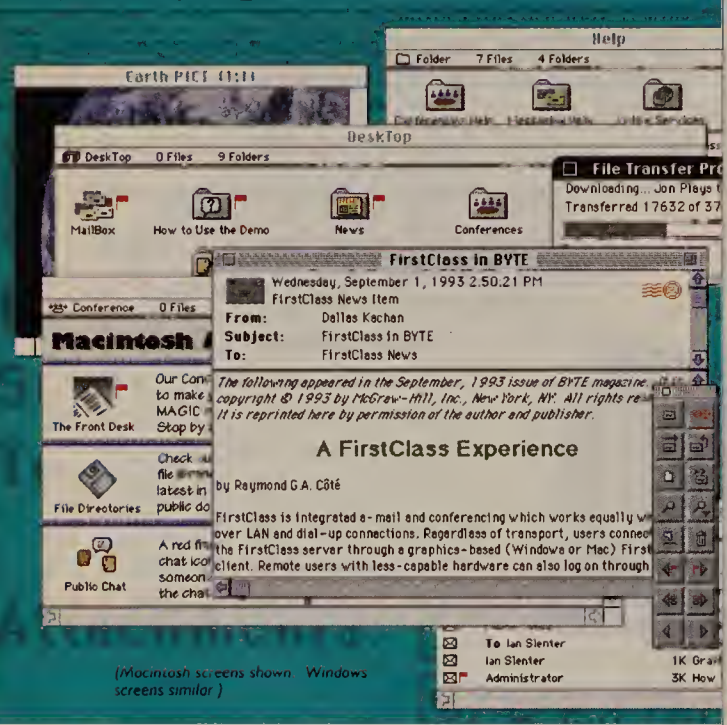
More than just a leading multi-platform *e-mail* system, FirstClass features *electronic conferencing* and *remote access*—all in the same package.

E-mail

Conferencing

Remote Access

BYTE magazine says "FirstClass blends conferencing and mail together under a remarkably clean interface that goes far beyond the capabilities of most mail systems ... *a regrettably rare example of a useful piece of software.*"




FirstClass™

- Macintosh® and Windows support on the same network or via modem *without* costly file servers
- Easily accommodate upwards of 20 simultaneous modem connections and more than a hundred network sessions on one server
- Connectivity via network or modem to other FirstClass servers or other mail systems
- Remote or local administration with the same client others use
- Messages with multiple fonts, styles and colors & unlimited file attachments
- Simultaneous multiple up & downloads
- Online sound and graphics
- Background searching
- Gateways to the Internet with full Usenet newsgroup replication
- Fax gateway for individual or broadcast faxing and more!

DEALER & CONSULTANT INQUIRIES WELCOME!

SoftArc Inc.
Global-Area Communications

1902 Ridge Road, #32S, West Seneca, New York, USA, 14224
Fax: 416-754-1856 Internet: sales@softarc.com FirstClass: 416-609-2250

Phone: 416-299-4723

Circle 299 on reader service card



## How Mac System Software Assists Telephony

Apple's Macintosh Telephony Architecture enables telephony products to work together, even those not designed specifically to do so, by using Apple events and the Telephone Manager extension to manage communication between the applications, drivers, and hardware that connect Macs and telephones.

At the Architecture's top layer are telephony-aware applications **(1)**—for example, a database that records order-entry information delivered by telephone, or a contact manager that looks up a contact's number and exports it to a dialer.

Apple events **(2)** carry messages between telephony-aware applications and telephony applications **(3)**, such as an answering-machine program, a graphical switchboard, a voice-mail system, or an automated paging system.

The telephony application in turn communicates directly with the Telephone Manager extension **(4)**, which then talks to telephone tools **(5)**—low-level drivers that control specific pieces of hardware, such as a modem or dialer **(6)**.

kind that you probably have in your house).

The GeoPort isn't just for data—it can also carry voice. At this writing, the 68040-based AV Macs—the Centris/Quadra 660AV and the Quadra 840AV—are better equipped for voice telephony than are the Power Macs. The AVs include a program called ApplePhone that lets you make and take calls: you talk into the microphone that comes with the Mac and listen through the Mac's speaker (or through headphones connected to its sound-output jack). ApplePhone isn't compatible with the Power Macs, since it requires digital signal processor chips (which are built into the AVs). ApplePhone can also serve as an answering machine. It lets you record and play a digitized outgoing message, and it digitizes incoming messages and saves them on your hard disk.

The AVs also include a microphone, the Apple PlainTalk Microphone, which their Power Mac siblings do not. But the Apple PlainTalk Microphone is disappointing when used with ApplePhone. The outgoing-volume level is too low, and the microphone picks up ambient room noise, giving the AV phone that annoying speakerphone echo.

A smarter way to put AV telephony to work is with Jabra Corporation's Ear Phone AV/Power Mac (see *Reviews, Macworld*, July 1994). This remarkable little gizmo looks like a standard earphone but has a sensitive microphone inside. The Ear Phone's two cables plug into the Macintosh's sound-input and sound-output jacks. The Ear Phone itself plugs into your ear—it's fairly comfortable, although after an hour or so you become increasingly aware of its presence.

If you use PlainTalk's voice-recognition, you'll be glad to know that the Ear Phone works with it. In fact, recognition accuracy with the Ear Phone is a bit better than with the Apple microphone, because the Ear Phone microphone is fixed at a constant distance from your mouth and because Jabra's engineers fine-tuned the audio levels.

### Desktop Voice Mail

Like them or not, voice-mail systems are coming on strong. Dedicated voice-mail systems start at about $4000 and skyrocket into the six-figure range, whereas Mac-based systems such as Cypress Research Corporation's PhonePro and Magnum Software Corporation's TFLX (pronounced *tee-flex*) start at several hundred dollars (not including the Mac, of course). Neither PhonePro nor TFLX is limited to voice mail—other uses include calling numbers in a database and playing a recorded message (a doctor's office might use this to set up an automatic appointment-reminder system); automatic order entry (callers enter item numbers from a catalog, and the system records the order); or telephone surveys (the system plays multiple-choice recordings and callers press keys to respond).

Every voice-mail system is a program that plays a message, records a message, transfers a call, and so on in response to keys pressed by the caller. To tailor a voice-mail system to your business, you must create the program that tells the system what to do. PhonePro and TFLX take remarkably similar approaches to the programming task. Both provide graphical programming environments, so you

*continues*

# Power with Style

## *Joule™ Drives provide the powerful value and performance you need today.*

There's a powerful difference in La Cie's Joule Drive that sets an unparalleled new storage standard.

True, Joule's stylish case won ID Magazine's silver medal design award, but ***inside*** is where the difference really counts. Here you have a choice of ***Quantum*** hard drives, SyQuest removables, or Optical drive mechanisms. All drives include the extra strength of up to 100 watt power supplies, built-in surge protection, digital active SCSI termination, 2 AC outlets, SCSI ID switching, up-front power switch and termination status LED, plus an exclusive ***built-in*** path to modular expansion!

Each Joule Drive is formatted and ***reliability*** tested, then shipped ready to plug and play including Silverlining disk management software (a $149 value), double shielded SCSI cable, power cable, and a superior warranty.

Joule Drives are only available factory direct from La Cie, a Quantum Company. When you get so many benefits and value in a Joule, along with Fortune 500® stability, the choice is simple.

Call our toll-free number today for more facts or to order now.

| Quantum 3.5" Drive | |
|---|---|
| 340MB | $359 |
| 540MB | $499 |
| 1080MB | $849 |
| 1400MB | $1159 |
| **SyQuest Removable** | |
| 105MB | $449 |
| 270MB | $689 |
| **Optical Removable** | |
| 230MB | $1099 |

> ***"Finally a hard drive that grows with you. The best value today."***
>
> Bob Marchant
> President, Agio Design

LACIE LIMITED
A QUANTUM COMPANY

To order or for more information, call toll-free

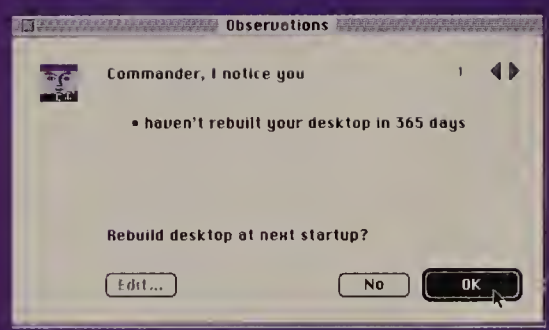
**800-999-1422**

Mon.-Fri. 5AM-7PM & Sat. 8AM-NOON PST

International 503-520-9000 Fax 503-520-9100 (24 hrs.)
UK 0800-89-3025 Australia 0014-800-123-007
VISA, MasterCard, C.O.D. and approved purchase orders accepted.

Prices shown for units with 40 watt power supply. Prices do not include shipping and only apply to products shipped within the continental United States. Add sales tax where applicable. Joule, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd., a Quantum Company. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or without recourse. © Copyright 1994 La Cie, Ltd. All rights reserved.

# Apple made it easy to use. We make it easy to do.




**In fact, we'll do it for you.** Introducing Open Sesame!, the world's first intelligent software assistant for the Macintosh. Open Sesame! observes how you work, *learns* your repetitive patterns, and then offers to do them for you. Automatically.

**With a single click,** Open Sesame! will open and close related sets of folders, documents and applications, create and manage multiple Apple Menu and Desktop items folders, and perform routine maintenance, like rebuilding your desktop...automatically. So you can do more with fewer clicks.

**For example,** suppose that every time you start up your Macintosh you immediately open your mail program. Open Sesame! will observe this and offer to do it for you. It will even find more efficient ways for you to use System 7.0, like making aliases and stationery automatically.

**Here's what the critics say:** "One that knocks my socks off is called Open Sesame! ...the simple fact is that Open Sesame! works smarter for me. It might just herald a new wave in mac smartware. ...The more you use it the better it gets." The Mac Manager, *MacWEEK*

"Macintosh users who like the flexibility of System 7 but tire of "tweaking" their desktop and Apple menu items will appreciate Charles River Analytics Inc.'s Open Sesame!" *INFOWORLD*

Open Sesame! is available at these quality resellers: MacWarehouse 800-255-6227, EGGHEAD 800-EGGHEAD, The Mac Zone 800-248-0800, ComputerWare 800-326-0092.

**To order direct, call 1-800-913-3535.**
For more information, call 617-491-3474 or fax 617-868-0780.

OPEN SESAME!

Charles River Analytics, 55 Wheeler St., Cambridge, MA 02138. Open Sesame! is registered trademark of Charles River Analytics. Macintosh and Apple are registered trademarks of Apple Computer, Inc.

**Circle 18 on reader service card**


program by dragging and linking icons that represent tasks and functions, and the end result looks more like a flowchart than a computer program.

PhonePro normally includes a high-speed SupraFax Modem (from Supra Corporation) upgraded with a chip that enables the system to play outgoing messages. For recordings to get through the Mac's modem port, they must be compressed in a way that compromises fidelity. TFLX doesn't have this sound-quality problem. It uses custom hardware between the phone line and the Mac's sound-output jack. Outgoing sounds are decompressed and played at the Mac's standard 11kHz or 22kHz sampling rate, which yields dramatically better fidelity.

TFLX's programming language is also more robust than PhonePro's. This isn't to say that you can't program complex systems in PhonePro—you can—but TFLX's language gives you more ways to express yourself, telephonically speaking. On the downside, I found the TFLX software a bit rough around the edges; PhonePro has a more polished feel to it.

Magnum has created an impressive demonstration of TFLX. Call 818/701-5051 and ask for the TFLX demo. If you call after hours (Pacific time), you're connected to the demo automatically.

### WHERE TO BUY

**Apple GeoPort Adapter** $129; **Apple Remote Access** $199 (Apple's estimated prices); Apple Computer, 408/996-1010.

**Desktop Dialer 1.4** $75; **PowerKey** $119; **PowerKey Remote** $49; Sophisticated Circuits, 206/485-7979, 800/827-4669.

**Jabra Ear Phone AV/Power Macintosh** $169; Jabra Corporation; 619/622-0764, 800/327-2230.

**PhonePro 1.2** $349, with modem $950; Cypress Research Corporation, 408/752-2700.

**TFLX 5.2** $495 to $1750; Magnum Software Corporation, 818/701-5051.

**Timbuktu/Remote 3.0** one user $195, two users $295; **Timbuktu Pro 1.0** $199; Farallon Computing, 510/814-5000.

**TurboDialer** $79.95; Advanced Software, 408/733-0745, 800/346-5392.

## Telephony from Afar

Telephones are, by their nature, for communicating from a distance—the prefix *tele* comes from the Greek for "far away"—so it's no surprise that there are plenty of tools for accessing your Mac-integrated telephone system from outside the office.

- Remote access: With Apple's Apple Remote Access software (ARA), you can dial in to the office network and use its printers, file servers, and E-mail. A remote network node can do anything a local node can do, albeit in slow motion; even with a 14.4-Kbps modem, accessing a remote network feels a lot like trying to run in a swimming pool.
- Remote control: Using ARA with Farallon Computing's Timbuktu Pro, you can actually control a remote Mac. From home, you can run programs on your office computer, open its documents, and see its screen—but again, in slo-mo. Note the subtle but important difference between Apple Remote Access and Timbuktu: ARA gives you access to a remote network and its services, while Timbuktu Pro gives you access to a remote Mac; you can't control or view the screen of a remote Mac using ARA alone. (If you're on a budget, buy Timbuktu/-Remote, which has fewer features than Timbuktu Pro but doesn't require ARA.)

## The Trouble with Telephony

For all its promises, some aspects of computer telephony still have rough edges. For example, most people have separate lines for modems and voice phones, but Macintoshes don't support this basic requirement. Another problem is that Apple's GeoPort Adapter works only with analog phone lines, and many businesses have digital phone systems. Apple has been saying that PBX-compatible GeoPort adapters would be available since the AV Macs were released last year, but none have appeared to date.

Finally, it's impractical and expensive to dedicate a Mac as a simple answering machine or telephone. Conventional phones, answering machines, and fax machines aren't about to go the way of the telegraph key. At least for the time being, computer-based telephony tools will supplement, rather than supplant, the phone equipment to which we've become addicted. **m**

**Next month: Word 6—Best and Worst**

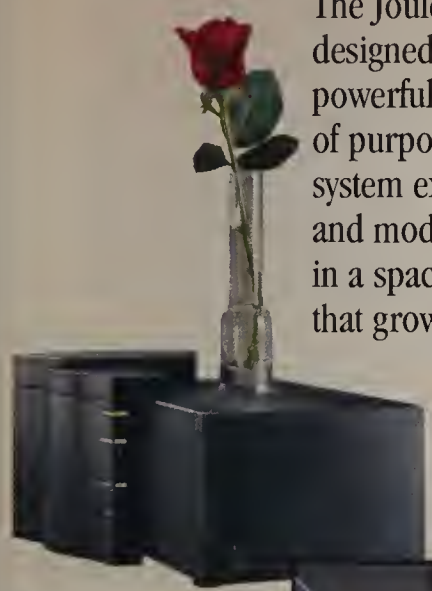
Contributing editor JIM HEID has been writing about the Mac since its introduction. His latest books are *Macworld Complete Mac Handbook Plus CD* (1993) and *Macworld Word 6 Companion* (1994), both published by IDG Books Worldwide.

# Style with Purpose

## Joule™ cable-free modular storage systems offer advantages that tower above the rest.

*"Innovative and compact. The Joule system sets a new standard for plug and play."*

Bill Leppo, President
Leppo Instruments



*The Joule Base Drive stands alone or at the bottom of your storage stack.*

The Joule system was designed to meet a powerful combination of purposes. To provide system expandability, and module portability in a space saving tower that grows without desktop clutter, as easy as 1,2,3.

**Step One:** Start with a Joule base drive. The base unit forms the foundation to future growth or functions independently. It includes a hard disk or removable drive, power supply, digital active SCSI termination, surge protection, AC outlets, shielded SCSI cable, and connections for a future storage system up to 28GB.

*In the Joule System, two cables are all the connections you'll ever need.*

**Step Two:** To ***expand,*** simply stack extra storage modules one upon the other. Built-in connectors eliminate cables and hassles.

**Step Three:** To ***remove*** a module, simply unplug and play without cables, termination or SCSI ID trouble. ***It's that simple.***

The Joule System offers a complete selection of storage modules and is only available direct from La Cie - owned by Quantum, a Fortune 500® company.

Joule has simplified the ***path*** to future storage. It's up to you to take the first step. Just call our toll-free number today for more facts or to order now.

**Complete Storage Module Choices — Great Prices**

| | | | | | |
|---|---|---|---|---|---|
| 85MB | 2.5"Hard Disk | $299 | 1650MB | 3.5"Full Height | $2039 |
| 170MB | 2.5"Hard Disk | $359 | 1800MB | 3.5"Full Height | $1259 |
| 256MB | 2.5"Hard Disk | $449 | 2050MB | 3.5"Full Height | $2329 |
| 170MB | 3.5"Half Height | $259 | 105MB* | SyQuest Drive | $419 |
| 270MB | 3.5"Half Height | $329 | 270MB* | SyQuest Drive | $659 |
| 340MB* | 3.5"Half Height | $359 | 5.0GB | DAT Drive | $1159 |
| 540MB* | 3.5"Half Height | $499 | TURBO | DAT Drive | $1359 |
| 1080MB* | 3.5"Half Height | $849 | 8.0GB | DAT Drive | $1729 |
| 1400MB* | 3.5"Half Height | $1159 | 155MB | Tape Drive | $569 |
| 230MB* | Optical Drive | $1069 | 600MB | Tape Drive | $789 |

* Available as a Base Drive, call for prices.

LACIE LIMITED
A QUANTUM COMPANY

**To order or for more information, call toll-free Monday – Friday 5AM-7PM & Saturday 8AM-NOON PST**

**800-999-1422**

International 503-520-9000 Fax 503-520-9100 (24 hrs.)
UK 0800-89-3025 Australia 0014-800-123-007
VISA, MasterCard, C.O.D. and approved purchase orders accepted.

Prices do not include shipping and only apply to products shipped within the continental United States. Add sales tax where applicable. Joule, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd., a Quantum Company. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or recourse. © Copyright 1994 La Cie, Ltd. All rights reserved.

Circle 54 on reader service card

eleven packages that

# Graphing beyond Excel

BY CHARLES SEITER

graphing software exists for one simple reason: it's difficult to perceive meaning directly from numbers. By presenting numbers as quantities that you can compare, graphing software makes numerical information more meaningful. The earliest number systems reflect this: Roman numbers and Chinese numbers both, for example, display the number three as a set of three lines. The Sumerian way to tally ten cows was to put ten little clay models of cows in a clay box, an early form of the pictographs you see today in newspapers.

Modern incarnations of those ancient representations—bar charts, line charts, and pictographs—are available to nearly all Macintosh users; even word processing programs typically include modest charting modules. For professional charting and graphing (the terms are interchangeable) in the Mac software universe, there are two types of graphs. First are the ones you can create with the ever-expanding feature set of Microsoft Excel, the standard Macintosh spreadsheet program.

In the second category are graphs that require features that go beyond Excel's limits. This category can be further divided into business and scientific

# offer sophisticated charting features

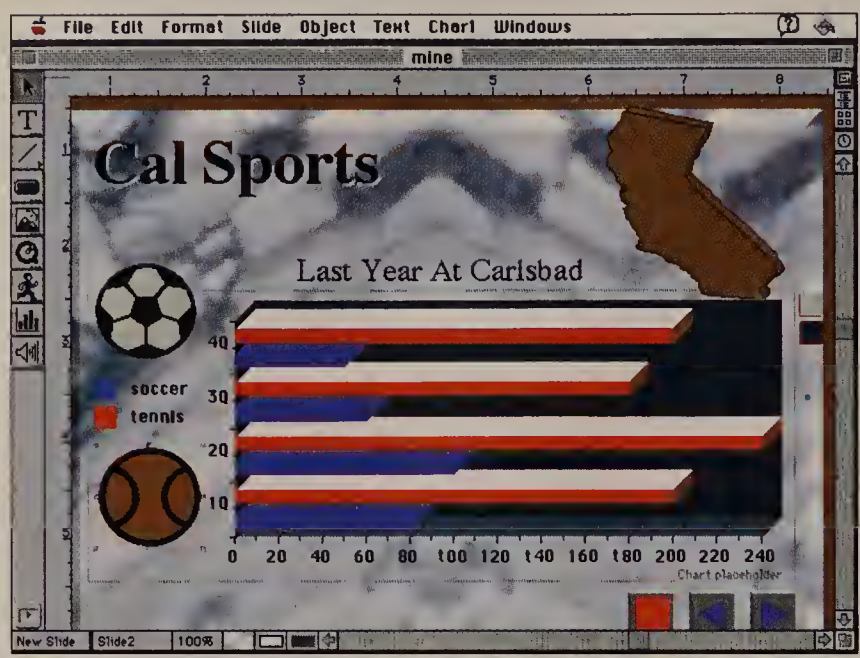
graphs. While both groups of products provide advanced charting features, there's a basic distinction between programs designed for business use and those designed for scientific use. For presenting small amounts of data in a visually interesting way (showing off yearly revenue growth, for example), business-charting packages are filled with features that let you highlight the message contained in your numbers. However, for seeking an underlying rule that unifies or explains lots of data covering a wide spectrum of time or other unit of measurement, scientific-charting packages offer advanced analytical capabilities that identify the significance of data and display its meaning graphically.

Whether your goals are business or scientific in nature, all commercial charting packages typically go beyond Excel (and also beyond the charting features of integrated packages such as ClarisWorks, Microsoft Works, and WordPerfect Works). The 11 charting programs *Macworld* compares will help you present your data in ways that Excel can't, or at least can't do easily.

### What They Do That Excel Can't

Although Excel 4.0 ($495, Microsoft Corporation, 206/882-8080, 800/426-9400) has a solid range of charting facilities, plus Wizards that simplify the process of creating charts, it lacks several key features. For example, business users typically want a set of attractive, consistent formats that mix charts and

text easily. They want these to be available in slide-show format, with an outliner for previewing and a player that allows for run-time versions of Mac-based presentations. For business users who need to present data in a formal setting, Chooser-selectable output formats for producing 35mm slides are also important. Microsoft recognizes the importance of these features, but it has bundled most of them into PowerPoint (its presentation package), not Excel. However, several companies have seized the opportunity and offer software with presentation-style charting.




**It's Alive** It's almost a shame to put this Astound chart on paper. During a presentation, the balls bounce, the bars grow, a sports anthem plays, and the state map materializes from the side.

Analytical charting often involves thousands of data points and requires specialized chart types. Excel's charting capabilities can handle only a few hundred data points comfortably. Although it's possible to perform curve fitting (which draws a best-fit line through data points automatically) and other types of data analysis in Excel, you must write your own formulas into separate columns in your Excel spreadsheet. In most scientific-charting packages, curve-fits and transforms are available as menu choices that plot directly with your data.

## Strictly Business

Business charting, as a rule, involves much smaller and simpler data sets than scientific charting. It's rare to see as many as 40 data points in a business chart, while a science graph often has thousands of data points. Besides simply presenting data that shows, for example, sales projections, business charts should keep an audience interested. For that reason, business-charting software often contains sound effects or flashy graphics. Scientific charting is designed to focus on presenting data in the most accurate way, typically in black-and-white, two-dimensional formats that meet the publishing constraints of many scientific journals. Business charts call for color, shading, and extensive use of 3-D and pseudo–3-D formats; users often want to create slide shows rather than printed charts.

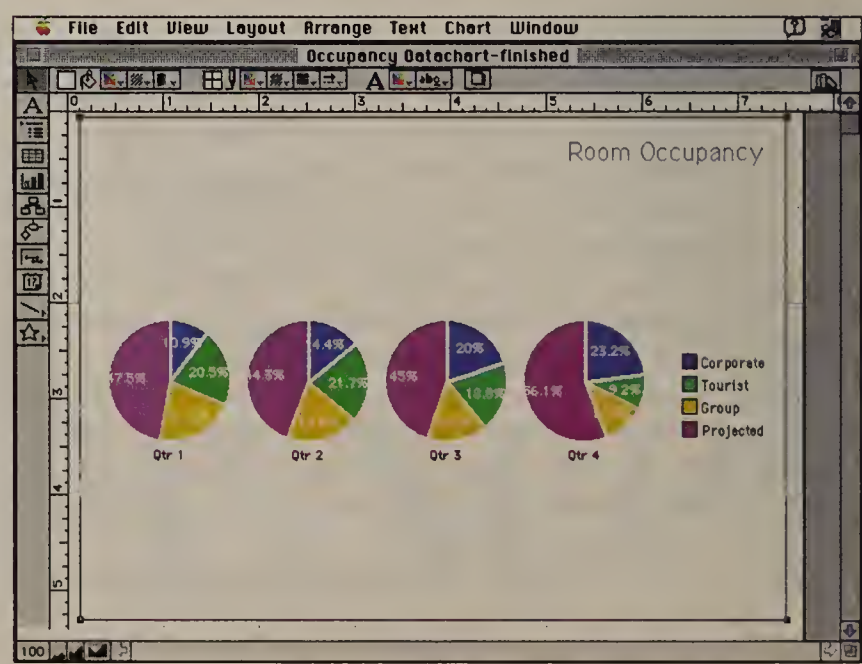
Astound 1.02 from Gold Disk ($399, 408/982-0200, 800/988-9888) is a good example of the dazzle-the-audience approach to business charting. It offers an adequate assortment of chart types (including 3-D versions of most charts), but it also provides in-chart animated figures, sound, and QuickTime movies. Gold Disk assumes that charts are typically going to be part of a slide show, so Astound offers different styles of slide-to-slide transition (fades, wipes, and other mock-cinematic devices, including sound effects). The user chooses the show's presentation style, which sets shadings, borders, bullets, headlines, and outlining.

In conventional charting packages, which are based on the idea that a slide show should pretty much resemble an annual report or diagrams from a business textbook, text and graphs are static. Astound, in contrast, allows text to float in from the sides of the screen or materialize from sparkling powder; chart elements can grow in sequence before the viewers' eyes. This is a long way from the plain black-and-white line charts that have been the foundation of business graphing since the time of Adam Smith's *Wealth of Nations* in the eighteenth century. Astound brings the excitement of multimedia to presentation software; this may be necessary to hold the attention of today's audiences (see "It's Alive").

While Astound takes an MTV approach to presentations, Computer Associates International's Cricket Graph III 1.5 ($129, 516/342-5224, 800/225-5224) offers no sound, no QuickTime movies, no animation, and a limited assortment of backgrounds and shading options; you'll find most of the fancy stuff in the company's Cricket Presents ($199) instead.

Cricket Graph is designed to produce business charts, and it does provide graphs that are aesthetically more pleasing than standard Excel charts, while requiring almost no training. Longtime Cricket Graph users claim that if you create charts infrequently, this relative lack of features (compared with Persuasion, for example) makes Cricket Graph easy to relearn. Fans of Cricket Graph also point out that if you will be distributing charts in print in black-and-white, most of the special effects in snazzier business-charting packages lose their impact anyway. If you're creating charts on the road using a PowerBook, Cricket Graph's compact size (less than a 1MB of hard drive space) is an asset.

**New Chart Tricks** ClarisImpact has built in many variations on the basic business-chart styles. If you don't like these Modern pies (*modern* means labeled here), you can switch instantly to one of many variants.



**DeltaGraph Pro**
**1** Business programs typically allow for a great variety of chart elements, some of which add confusion. **2** Most business-charting programs are organized around a slide-show format and make it easy to import sound and QuickTime movies. **3** Evocative backgrounds (often provided as templates) make a consistent tone in a chart presentation. **4** Business charts usually feature clip art, if only the company logo. **5** Where are axes? A science chart wouldn't allow this, but business charts often show data floating in space.

## Imaginative Business Graphs

ClarisImpact 1.0 ($399, Claris Corporation, 408/727-8227, 800/544-8554), the newest business-charting package for the Macintosh, represents an intriguing mix of features. Claris set out to accommodate every sort of picture used in business communication. Besides charting, Impact does organization charts, Gantt-style time lines, calendars, flowcharts, and fancy tables.

Although ClarisImpact at first appears to offer a limited chart repertoire similar to Cricket Graph's, the basic data-charting facilities all have imaginative variations. So while you can of course call up a plain pie chart (called Trad Pie in the list of Impact choices), you can also try the flashier International Pie or Modern Pie instead (see "New Chart Tricks"). In short, every chart type in Impact's basic gallery is equipped with options to enhance its visual appeal. You can add shadows to simple line charts for emphasis, mix stacks of different objects in pictograms, and add titles at rakish angles for all sorts of chart elements.

## Best of Both Charting Worlds

Astound, Cricket Graph, and ClarisImpact are designed for business graphs and don't delve significantly into scientific charting. DeltaPoint's DeltaGraph Pro 3 3.0.4 ($195, 408/648-4000, 800/446-6955), however, is a serious attempt to incorporate everything you could want in a single program, whether you're creating business or science charts. Generally, DeltaGraph Pro 3 succeeds.

DeltaGraph has a variety of chart types ranging from basic business (bar, line, column, pie, scatterplot), to fancy variants of those charts, to specialized scientific types (polar, XY vector, and so on). And you can select these from a dialog box that shows thumbnails of each type. It offers Smart Layouts, analogous to Persuasion's AutoTemplates, which minimize your effort and promote consistency in your presentations. It incorporates clip art, Pantone-selected color palettes, and QuickTime movies; DeltaGraph also opens Excel files directly. Finally, DeltaGraph supports AppleScript, so advanced users can write short AppleScript programs that, for example, open every data file in a folder and make identically formatted graphs for each file.

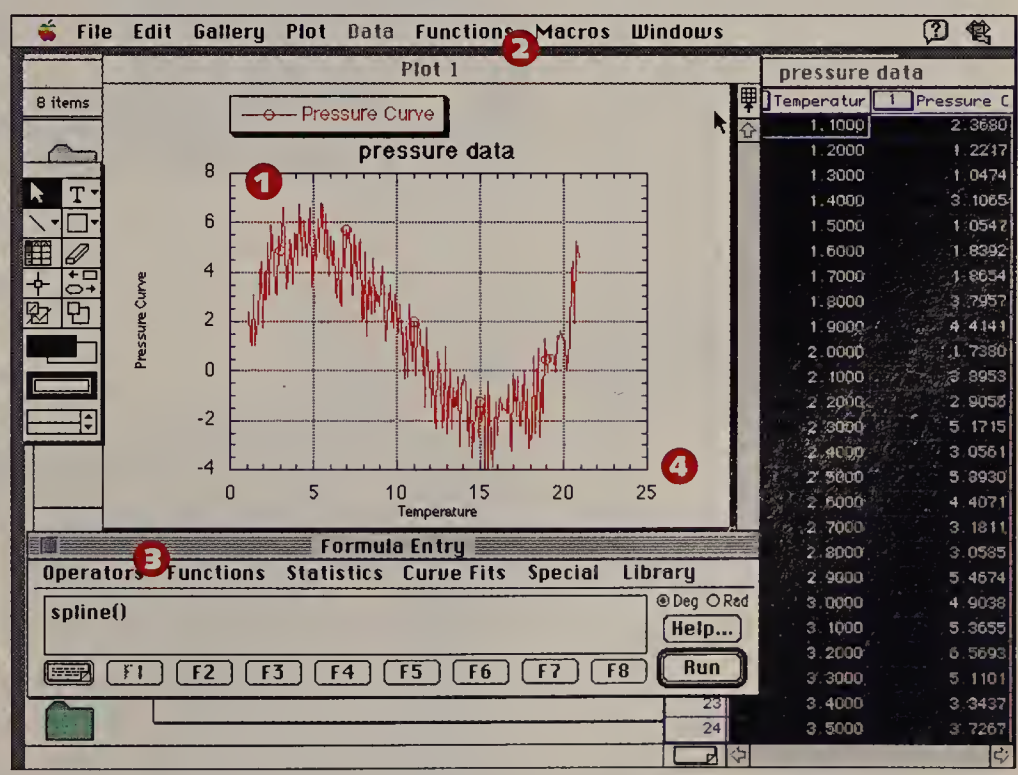
What makes DeltaGraph unique, however, is that it combines snazzy designer effects with math capabilities equivalent to those in the science-oriented programs. Although business users might never get around to adding error bars to data or fitting a sales curve with a spline, and engineers probably won't put clip-art palm trees in the background of XY scatterplots, DeltaGraph puts these capabilities and more just a mouse-click away.

## Make a Science of Charting

Deciding which scientific-charting package to buy would be a lot easier if one program stood out from the others. However, there is no product you can quickly dismiss because it has a short feature list or an unfriendly interface. And while the programs all create many of the same charts, they are also quite specialized. Each program was developed by scientists whose particular background shows in the software.

SigmaPlot for the Macintosh 4.14 ($295, Jandel Scientific, 415/453-6700, 800/874-1888), for example, is produced by a company whose main product line is statistics software. As you'd expect, SigmaPlot

**KaleidaGraph**
**1** Science charts often show thousands of data points, not just a handful of sales figures. **2** Macros or a full programming language are typical of science charting software. **3** Science charting software supports a wide range of data-manipulation options. **4** Science charts are usually black-and-white. Even now, very few science journals—the eventual home for most science charts—publish in color.



is especially competent at plotting statistical data sets. With its roots in analysis of the kinds of data sets that appear in population biology, biophysics, and chemical kinetics, the product is ideally suited to producing charts for scientific reference journals. This means uncluttered black-and-white graphs with an emphasis on curve fitting and data statistics designed to match scientific-journal chart-format requirements.

Produced by a company called WaveMetrics, Igor Pro 2.0 ($495, 503/620-3001) has, as you'd expect, the best set of tools for analyzing waveforms (typically, plots of time versus voltage, which are used to determine repetitive signals). Igor Pro has so many analysis features that it could be described as an electrical engineering program that also includes black-and-white charting. Besides FFT (fast Fourier transform) functions, Igor's macro language supports statistics, peak fitting, and integration in spectroscopic/chromatographic data (see "Advanced Charting").

In contrast to most charting packages, in which the capability to open Excel files is considered a luxury, Igor Pro supports not just Excel files but also direct data acquisition from National Instruments' GPIB boards. Although with enough tinkering with

## MAKE A SPLASH WITH YOUR GRAPHS

When it comes to presenting information effectively and attractively, Persuasion ($495, Aldus Corporation, 206/628-2320) and Microsoft PowerPoint ($395, Microsoft Corporation, 206/882-8080, 800/426-9400) control the lion's share of the Macintosh business-presentation market (see "Presentation Software That Delivers," *Macworld*, July 1994). Although they're not necessarily powerhouse charting engines like DeltaPoint's DeltaGraph Pro 3, they include strong chart repertoires embedded in a slick presentation environment.

**Persuasion Adds 3-D Charts** Aldus's Persuasion has always offered a huge set of presentation templates, and now in version 3.0 it provides a large assortment of charts as well. If you consider every possible permutation of charts, Persuasion chart types number 80. The major charting enhancement to version 3.0 is the addition of 3-D variants (not just shading or adding depth) for every type of two-dimensional chart, combined with full rotation and perspective control.

With a little practice you can easily tinker with perspective and shade the appropriate data elements to either conceal trends that you don't want your audience to notice or draw attention to trends you don't want your audience to miss. You can hot-link data, presumably residing in a spreadsheet, to Persuasion charts using System 7's subscribe feature; in turn, you can hot-link charts to word processing documents with the publish feature. Persuasion lets you overlay multiple elements on a single chart page, so it's possible to create your own new chart types from Persuasion's repertoire.

The real strength of Persuasion, however, is that its AutoTemplates have preselected fonts, shading, titling, and other elements that will make you look like an experienced designer, while requiring little effort or skill on your part.

**Aldus Persuasion 3.0** If you have lots of data to present, but lack an artistic flair, Persuasion's AutoTemplates make it a snap to create attractive and consistent slides. And version 3.0 adds true 3-D capabilities and a wide range of chart types.

**Microsoft PowerPoint** Version 4 promises 100 chart types as well as some features, such as curve fitting and error bars, that are usually found in scientific-charting programs. The new version will also include a Wizard that makes it easy to automate presentations to suit a particular task or meeting.

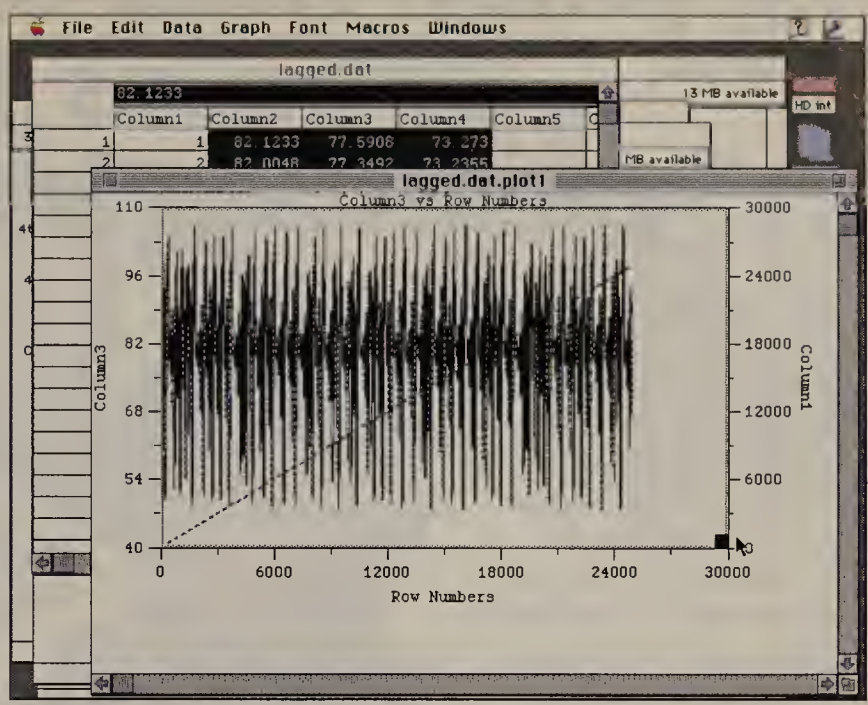
**PowerPoint Hits 100 Graphs** Microsoft PowerPoint is evolving according to Microsoft's standard strategy: look over the feature set in your biggest competitor and find a way to integrate those features into Microsoft Office, a suite of applications that includes Word, Excel, PowerPoint, and Mail. PowerPoint version 3.0 was shipping as this was written, but since version 4 for Windows had already been introduced, it's clear what features the Mac version of PowerPoint will have by midsummer. Version 4 for Windows adds several new chart types, including surface plots, radar charts, and doughnut plots (a kind of 3-D radar chart). For comparison with Persuasion, Microsoft counts 100 chart types in PowerPoint, although some of these are minor variants of each other. PowerPoint supports full rotation of its 3-D charts; as with Persuasion, you can be disarmingly honest or you can slyly fudge the way you present your data.

Features typically found in scientific-charting programs are now also available in PowerPoint. For example, PowerPoint offers curve fitting, error bars on chart data points, and computation of trend lines through data. The main improvement in PowerPoint, however, is the AutoContent Wizard's automation of common presentation tasks (sales meetings, quarterly reports, and so on). You just pick a type and add a bit of content. Similarly, the Pick A Look Wizard offers a set of template formats to apply for presentation consistency. A new drill-down feature lets you call up hot-linked documents in other Microsoft applications during a computer-based presentation, so that you can marshal supporting details for an argument on the spot in response to questions.

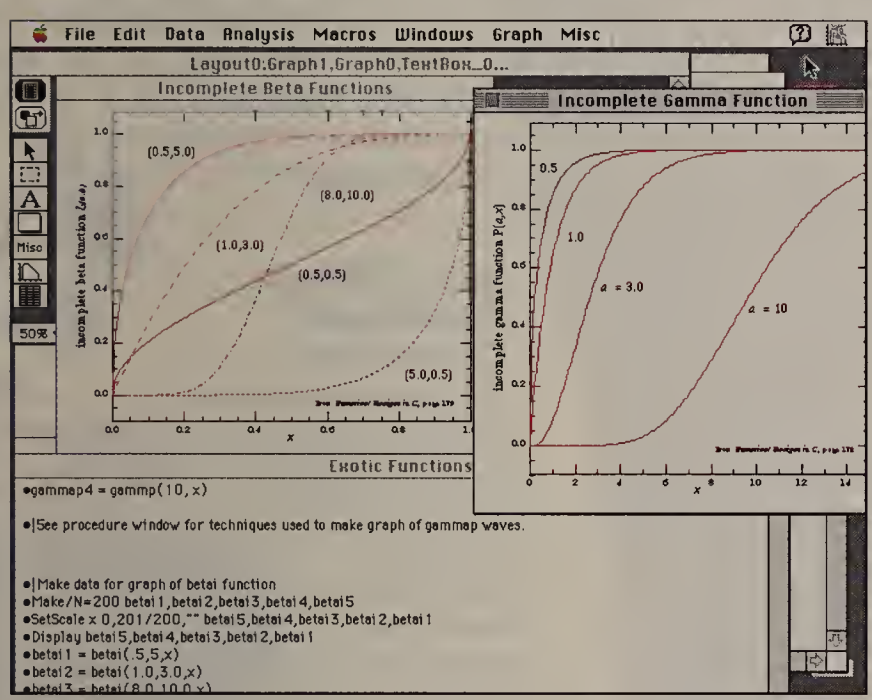
color features and chart elements you could make an Igor plot look like a DeltaGraph business chart, the graphical and operational macro capabilities in Igor target the program clearly at advanced scientific users who aren't put off by programming.

### Charting the Really Big Numbers

Spyglass Plot 1.0 ($295, Spyglass, 217/355-6000) is specialized for a unique function: charting very large data sets (see "Make Your Point"). It doesn't offer a large variety of chart types, but it can handle data sets of 32,000 columns by any number of rows, limited only by memory. Spyglass Plot chews up data quantities that the other scientific-charting programs simply choke on. (In business charting, 256 columns by a few thousand rows is considered a huge data set.) These monstrous data sets are stored in files in the supercomputer format called HDF (Hierarchical Data Format), and Plot reads these files directly. Spyglass Plot doesn't do 3-D: the company assumes you'll do your 3-D color contour plotting in its companion product Spyglass Dicer 2.01 ($695) and that you are using Plot for an XY view of data only.




**Make Your Point** That's 25,000 points, represented in this Spyglass Plot chart. Plot is useful mainly for two-dimensional views of the giant 3-D data sets handled by Spyglass Dicer and Transform.




**Advanced Charting** Igor Pro incorporates a powerful C-like programming language that extends Igor's analytical charting powers beyond the built-in functions of other programs.

KaleidaGraph 3.0 ($249, Synergy Software, 215/779-0522, 800/876-8376) is the most general-purpose scientific-charting program. It handles data sets of up to 256 columns by 32,000 rows, imports data directly from Excel, and offers sets-plotting templates. What sets KaleidaGraph apart is a particularly easy-to-use implementation of curve fitting—you can define a large set of possible functions for curve fitting, and then compare plots of these model functions with your original data on a single plot. While it's possible to do this by workarounds in the other scientific-charting programs, KaleidaGraph makes it easy.

For charting features combined with serious math capabilities such as FFTs, you have two choices: SuperAnalyst 1.9 ($249, SuperSoft, 801/225-4356, 800/827-4351) or Igor Pro. Of the two, SuperAnalyst is the simpler and less-expensive program that offers not only basic charts, drawing, and overlays, but also advanced computational functions, such as autocorrelation. SuperAnalyst goes beyond most competitors in its Function and Analysis menus, which include a variety of styles of numerical integration, differentiation, and root-finding for functions obtained from original data sets by SuperAnalyst's built-in smoothing routines (moving and polynomial averages, and three kinds of splines, for example).

### Charting the Way

It's probably not surprising that charting programs encompass such a variety of features and target audiences, given that charts are the most common and effective way to communicate any type of numerical data. From the venture-capital slickness of ClarisImpact to the analytical artillery of Igor Pro, a wide range of charting products pick up where Excel leaves off. **m**

*Macworld* contributing editor CHARLES SEITER has reviewed most of the programs here, and consults with a variety of scientific firms on presentation design.

## CHARTING SOFTWARE

MW EDITORS' CHOICE

Because there are a number of charting programs that excel at producing specific types of graphs, to make our Editors' Choice selection we focused on programs that handle a wide range of chart types—both business and scientific.

**DeltaGraph Pro 3 3.0.4** For most charting purposes, it's hard to fault DeltaGraph Pro 3. The price is right, the feature set is huge, it's easy to use, and you can hot-link data from Excel. DeltaGraph Pro offers not only the most-wanted features for business programs but the key features for scientific charting as well. **Company:** DeltaPoint. **List price:** $195.

# Money. Make It or Save It with TurboRes® Plain-Paper Typesetting from LaserMaster®

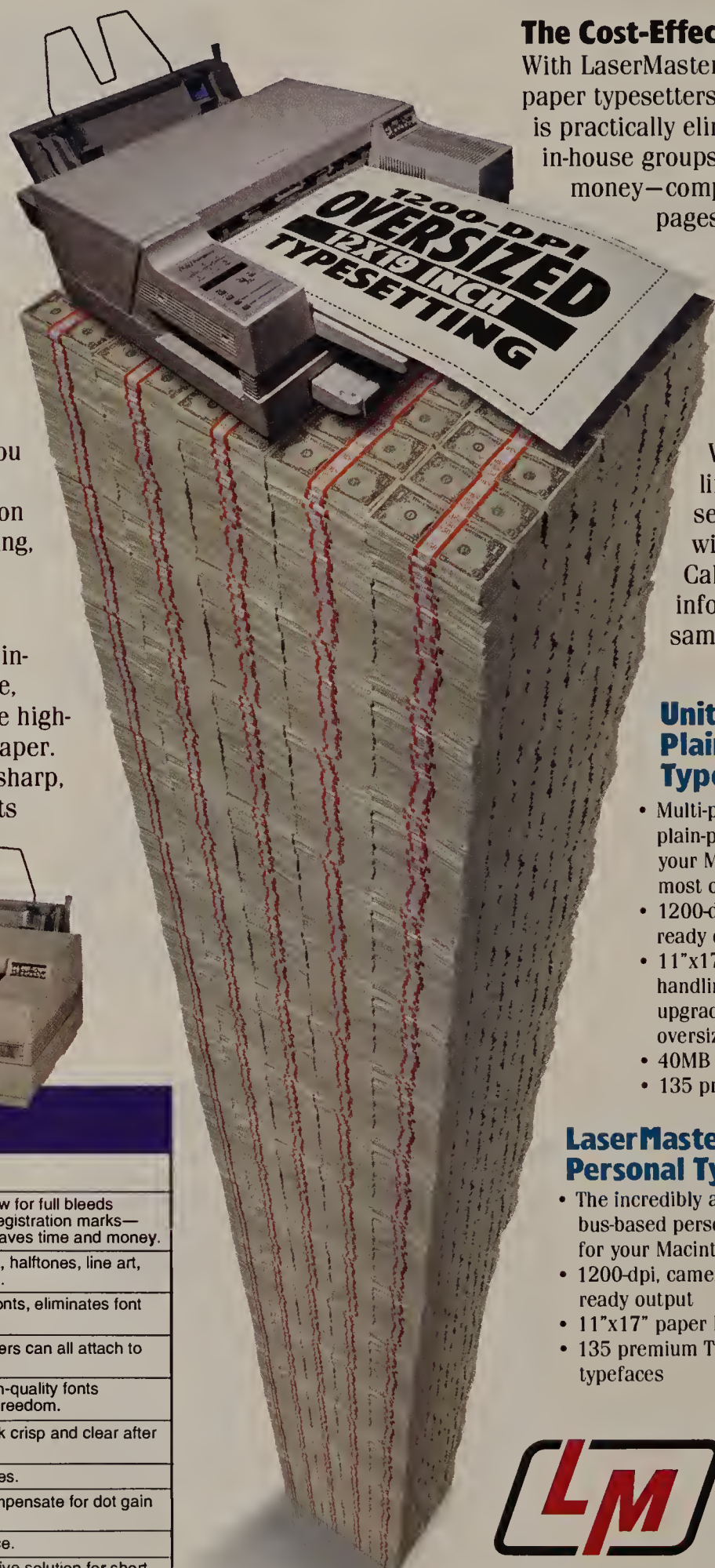
Buying your next printer doesn't have to be a guessing game. LaserMaster's TurboRes Plain-Paper Typesetters offer the features today's professionals demand. Whether you provide TurboRes Plain-Paper Typesetting as a service or need the capability in-house, LaserMaster's line of typesetters will make or save you money!

## Oversized Printing

The Unity™ 1200XL-O provides 12"x19" paper support that lets you print 11"x17" documents with full bleeds, crop marks, and registration marks. That means no more keylining, stripping, or tiling!

## 1200-dpi Output

All of LaserMaster's TurboRes Plain-Paper Typesetters give you precise, 1200-dpi camera-ready output—the highest resolution available on plain paper. Your text is crisp, your line art is sharp, and your halftones and screen tints are smooth.



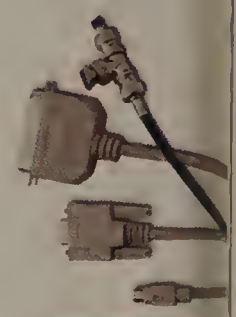

## The Cost-Effective Choice

With LaserMaster's 1200-dpi plain-paper typesetters the pre-press process is practically eliminated. That means in-house groups will save time and money—complete camera-ready pages go right to print! And plain-paper typesetting offers a fast and economical way for print shops and service bureaus to provide camera-ready output to their customers.

TURBORES® FAST • LOW COST • RECYCLABLE TYPESETTING

## For More Information

Whichever you choose, LaserMaster's line of TurboRes Plain-Paper Typesetters offer professional features, with economics that can't be beat. Call now for more information and some sample output.



OVERSIZED 12"x19"

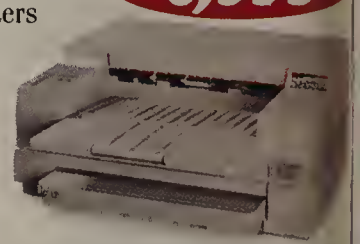
### Unity 1200XL-O Plain-Paper Typesetter

| Features: | Benefits: |
|---|---|
| Oversized Typesetting | 12x19-inch pages allow for full bleeds with crop marks and registration marks—eliminates paste-up, saves time and money. |
| 1200-dpi Resolution | For camera-ready text, halftones, line art, reverses, and screens. |
| Internal Hard Drive | Stores thousands of fonts, eliminates font downloading. |
| Multi-Platform Networking | Mac, PC, and Unix users can all attach to the same printer. |
| 235 Premium Type 1 Typefaces Pre-Installed | Large selection of high-quality fonts provides typographic freedom. |
| ClearCopy™ Copier Enhancement | Ensures halftones look crisp and clear after photocopying. |
| 33-MHz Processor | Faster processing times. |
| Gamma Correction | Adjusts images to compensate for dot gain on press. |
| Software Upgradable | Prevents obsolescence. |
| Direct-to-Plate Option | Provides a cost-effective solution for short print runs. |
| TurboGray™ Technology | Improves the appearance of halftone images. |

### Unity 1200XL-T Plain-Paper Typesetter

$6,995

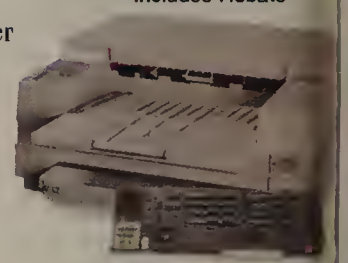
- Multi-platform, plug-and-play plain-paper typesetter for your Macintosh®, PC, and most other computers
- 1200-dpi, camera-ready output
- 11"x17" paper handling (user upgradable to oversized 12"x19")
- 40MB hard drive
- 135 premium Type 1 typefaces pre-installed



### LaserMaster 1200XL Personal Typesetter

$4,995
Includes Rebate

- The incredibly affordable bus-based personal typesetter for your Macintosh or PC
- 1200-dpi, camera-ready output
- 11"x17" paper handling
- 135 premium Type 1 typefaces



LM® LASERMASTER
TURBORES TYPESETTING DIVISION
*The Professional's Choice™*

**CALL 800-950-6868**
**or 612-944-9330 Fax: 612-944-0522**
DEPT. 79F

Circle 43 on reader service card

© 1994 LaserMaster Corporation, 6900 Shady Oak Road, Eden Prairie, MN 55344, (612) 944-9330. LaserMaster Europe, Ltd., Hoofddorp, The Netherlands, (31) 2503-22000. LaserMaster, the LM logo, and TurboRes are registered trademarks; "The Professional's Choice," TurboGray, ClearCopy, and Unity are trademarks of LaserMaster. All other product or brand names are marks of their respective holders. These products incorporate TrueImage v.1 software with LaserMaster enhancements for performance and resolution. All rights reserved. Specifications and pricing subject to change without notice. Prices valid in U.S. only. (AMF/JSD) 4/94

BY LON POOLE

# Quick Tips

## Tips, Tricks, and Shortcuts

MICROSOFT WORD CAN CREATE TERRIFic tables, but you cannot place them directly into Aldus PageMaker 5.0. Ken Kreshtool of Cambridge, Massachusetts, devised a workaround using the LaserWriter 8 printer driver, which PageMaker 5.0 requires. This latest generation of the LaserWriter driver lets you save your output as an EPS file, which is perfect for placing into PageMaker. Follow these steps:

1. In the Chooser, choose LaserWriter 8.
2. In your Word document, select (that is, highlight) the table.
3. In Word, choose the Print command. You want only the table saved as an EPS file, so in the first dialog box that appears, set the Destination option to File and check the Print Selection Only checkbox. Click the Save button, and in the next dialog box give a sensible name to the EPS file, choose Enhanced Preview (usually preferable to Standard Preview) from the Format pop-up menu, and adjust the other settings to taste (use balloon help for guidance). Click the Save button.
4. In PageMaker, use the Place command to place the table as you would any other graphic. The EPS graphic may fill the page on which you place it (Word doesn't always clip the EPS image properly), but you can crop and move it as necessary after placing it.

This approach has two advantages over using Word's Copy As Picture command. First, hairline rules print correctly instead of being converted to 1-point lines. Second, PageMaker remembers a link to the EPS file, so you can update your PageMaker table simply by editing the original in Word, saving it again as an EPS with the identical name as the previous EPS file, and updating the link in PageMaker. PageMaker even preserves all the cropping and moving you did after placing the first edition of the table in PageMaker.

Note: LaserWriter 8.0, which comes in the box with PageMaker 5.0, is buggy, although it seems to work fine for this purpose. The current version, LaserWriter 8.1.1, fixes bugs and improves functionality. It is available from online services and is included with Aldus's Macintosh Filter/Driver Pack Plus, which also upgrades PageMaker 5.0 to version 5.0a ($9.95 from Aldus, 206/628-2320).

### Gradient Trapping Update

The procedure presented in a sidebar in last June's *Quick Tips* for trapping a gradient-filled object in Illustrator 5.0 and 5.1 is missing one important step. Although you can set the gradient-filled trap to overprint, the gradient fill does not overprint correctly, reports Bob Faulkner of Venice, California. The workaround is to save a copy of the finished illustration in Illustrator 3.0 format, and separate the 3.0 version with Adobe Separator, or place the 3.0 version in a page-layout program and separate it there. (Keep the original Illustrator 5.0 or 5.1 version in case you need to change it later.) Saving in Illustrator 3.0 format converts the gradient fill into an object blend (a series of paths), which overprints correctly. Alternatively, you can manually create a blend with the blend tool in Illustrator 5.0 or 5.1 (the same process works in FreeHand). Illustrator 5.5 includes a filter that automatically performs trapping, but the filter does not work with gradients; so the manual workaround still applies.

### Hard Drivers

**Q.** Please tell me if anyone sells driver software for hard drives that takes advantage of SCSI Manager 4.3 found in the 660AV, 840AV, and all Power Macs.

*David A. Brown*
*Saratoga, California*

**A.** Eight companies I contacted said their latest drivers take full advantage of SCSI Manager 4.3. The hard drive utility applications that install 4.3-compliant drivers range from the no-frills $49.95 FormatterOne Pro 1.0 (Software Architects, 206/487-0122) to the full-featured $199 Hard Disk Toolkit 1.5 (FWB, 415/474-8055). For a comparison of those and eight other hard drive utilities whose latest versions can install 4.3-compliant drivers, see "Hard-Drive Optimizers," *Macworld*, March 1994. Of the companies listed there, Bering Industries says it is withdrawing from the Macintosh hard drive–utility market, and Golden Triangle did not return my calls.

*continues*

He eats your storage space

# FOR LUNCH

*and your money*

# FOR DINNER.

*(filus humongous)*

You're well acquainted with this megabyte-eating beast.

But perhaps you're not yet familiar with DynaMO,™ the magneto-optical solution that eliminates the horrors of data storage.

| Drive Specifications | |
|---|---|
| Capacity | 128-230 MB |
| Data transfer rate | 2.1 MB/s (max.) |
| Average seek time | 30 ms (typ.) |
| Rotational speed | 3,600 rpm |

This compact little set-up will save you big. Like Syquest, you put an external drive on-line and save your files to removable, rewritable cartridges. But unlike Syquest, you don't have to break the bank each time around.

With DynaMO, you can use 128 and 230 MB industry standard 3.5-inch cartridges. The cartridges aren't vulnerable to the everyday abuse that might otherwise do in your data. In fact, Fujitsu cartridges are so reliable we back them with a lifetime warranty.

There's nothing frightening about setting-up DynaMO either. You just plug the drive into your PC or Macintosh.

Get the data on DynaMO by calling **1-800-831-4094.** Or request information by fax at 1-408-428-0456 (document 1368).

We'll show you how to enjoy some monstrous savings.

© 1994 Fujitsu. All rights reserved. DynaMO is a trademark of Fujitsu Computer Products of America, Inc. All brand names and product names are trademarks of their respective holders.

FUJITSU

COMPUTERS, COMMUNICATIONS, MICROELECTRONICS

**Circle 202 on reader service card**

SCSI Manager 4.3 is the latest version of the part of the operating system that controls data transfer between a Mac and its SCSI devices. Theoretically, Apple could use a system extension to add SCSI Manager 4.3 to all Centris and Quadra models, but so far it has not done so.

The performance improvement you experience after switching to a 4.3-compliant driver could be anywhere from 0 to 30 percent, depending on many factors, including the following:

- The type of drive or drives you use
- How much data your applications transfer at a time (for example, opening and saving small word processing or spreadsheet documents will show less improvement than opening and saving color images and multimedia files)
- The relative quality of the software engineering in the old and new drivers
- Cable quality (it is possible for poorly shielded cables to degrade performance by 500K per second)

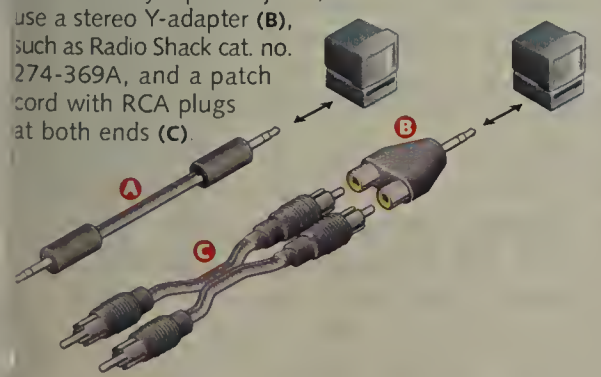
### Sound-Input Cable

**Q.** Realizing I needed a patch cord to connect my Quadra 840AV to my sound synthesizer, I examined the stereo plug on the Apple speech-recognition microphone that came with the computer. I was surprised to learn that it is nonstandard, and I'm unable to find one like it or even get information about it from Apple. Short of cutting the plug off my Apple microphone, how am I to obtain a patch cord?

*David McDonald*
*Koloa, Hawaii*

**A.** Although the Apple speech-recognition microphone has a nonstandard plug, you can use an ordinary patch cord to connect an audio source to the audio-input port of a 660AV, 840AV, or any Power Mac. The mike's extralong plug reaches deep inside the sound-input port to draw power for the mike's internal preamplifier. A patch cord doesn't need electricity, so its regular ⅛-inch stereo miniplug need not reach the port's power lead.

To input sound to an AV or Power Mac from a source other than a microphone, you need an audio patch cord. For a source whose output jack is the same type as the Mac's input port, you must use a patch cord with a ⅛-inch stereo miniplug at each end **(A)**. For a source with RCA-style phono jacks, use a stereo Y-adapter **(B)**, such as Radio Shack cat. no. 274-369A, and a patch cord with RCA plugs at both ends **(C)**.




### Dvorak Keyboard Layout

**Q.** Where can I obtain software that will convert my keyboard to the Dvorak system through the Keyboard control panel?

*Sara Neyer*
*Gillette, Wyoming*

**A.** America Online and CompuServe both have several Dvorak keyboard-layout files, and so do user groups such as BMUG (510/549-2684). All layouts adhere to the Dvorak layout for letters but put punctuation, symbols, and diacriticals in different places (see "Dvorak Variations"). Detailed reasons for the differences accompany each free keyboard layout. You install a keyboard layout by dragging it to the System Folder.

In addition to switching keyboard layouts with the Keyboard control panel, you can use System 7's Keyboard menu, which is normally hidden. To make it appear between the Application and Help menus, use ResEdit to turn on the "Always show kybd. icon" option in the System file's itlc resource.

**Dvorak Variations** A number of Dvorak keyboard layouts are available from online services and user groups. These versions differ in the location of punctuation, symbols, and diacriticals. Shown here are the ANSI Dvorak and US Dvorak layouts.

### Express Modem Problems

**Q.** I have heard the Apple Express Modem has problems, but I have yet to hear precisely what is wrong with it. The one in my Duo 230 fails miserably at high-speed file transfers using the Zmodem protocol. Is the Express Modem to blame? If not, what causes the problems, and can they be fixed or am I stuck with a lemon? To the best of my knowledge, I have the latest software for my modem.

*Aaron Hathaway*
*Santa Fe Springs, California*

**A.** The Express Modem had a variety of problems initially (too numerous to list here), but the many sources I contacted agreed that version 1.1.2 of the software makes the Express Modem as reliable as any modem. That version was released last year for PowerBooks as well as 660AV and 840AV Macs and is available from Apple dealers and online information services, or as part of the System Update 2.0.1 disk from the Apple Order Center ($10, 800/769-2775, ext. 6717). (The Power Macs also use Express Modem software, and come with version 1.5.1.)

Your problem may be one that could afflict any type of modem. Maybe you need to change your communications program's modem-initialization string or its settings for Zmodem transfer. Get specific advice from the publisher of each communications program you use. For example, Software Ventures advises Express Modem owners to use the latest versions of its communications applications, MicroPhone II 5.0 and MicroPhone Pro 2.01. Where previous MicroPhone versions used a generic initialization string (which Software Ventures calls a driver) with the Express Modem, the latest MicroPhone versions have a special initialization string for the Express Modem (and individualized strings for other modems).

*continues*

# Inspiration®— think of it as your electronic napkin...*Plus!*

## It's the Quickest Way to Develop Ideas and Plans.

With Inspiration's Diagram view, quickly brainstorm ideas and visually communicate even your most complex processes. Flip to the integrated Outline view to transform your ideas into effective written documents.

Call today for your

**FREE DEMO!**

**(800)877-4292**

Inspiration®

Inspiration Software®, Inc.
503.245.9011 Tel. • 503.246.4292 Fax

© 1994 Inspiration Software®, Inc.

**Orderly Finder Window** You can easily force an item to the top of a Finder window without visibly changing the item's name, like the items shown here above the divider line in the Apple Menu Items window. You paste a blank line (not a blank space) at the beginning of the item's name. (Incidentally, the divider line is a sound file whose name is a string of hyphens and whose custom icon is a blank white graphic. The Show Clipboard item is an alias of the Clipboard file in the System Folder.)

If you're downloading files from a Unix workstation or mainframe, you may need to specify certain options along with the Unix file name. Try **sz -w 2048 filename** for text files and **sz -e filename** for binary files (replacing **filename** with the name of the Unix file you want to download). If you're having trouble with the Unix telnet command, try the **rlogin** command, and vice versa. (This information is based on the ZTerm 0.9 FAQ by Les Jones, available on America Online and on the Internet through the comp.sys.mac.comm and comp.sys.mac.apps Usenet newsgroups.)

Also, don't overlook the possibility that the problem may lie with the modem or communications program to which you are connecting.

### Forcing Order Invisibly

**TIP** Forcibly reordering items viewed by name in a Finder window by putting spaces or punctuation marks at the beginning of the items' names gets up my nose. It visibly pollutes the names and conspicuously messes up name alignment. Here's how to invisibly force the order you want, as illustrated in "Orderly Finder Window."

Open the Note Pad or a new document in TeachText or any word processor. Press the return key to create a blank line, select the blank line, and copy it to the Clipboard. Switch to the Finder, click the name of an item you want to appear at the top of its folder, press the up arrow key to move the insertion point to the beginning of the selected name, and paste. The whole name will go blank, but don't fret. Press the enter key or click outside the name, and the name will spring back into view. The renamed item will jump to the top of the window if you're viewing by name. To increase an item's alphabetic buoyancy, paste the blank line two or more times at the beginning of the item's name.

*Chris Bloomfield*
*Kelburn, Wellington, New Zealand*

### Finding Nothing in ClarisWorks

**TIP** There is a way in ClarisWorks databases to find all records where a certain field is blank (or not blank). Use the Find command to create a find request, select the field of interest, and enter **<>""** to find all records within the field that are not blank. Making the same entry and checking the Omit checkbox finds records where the field is blank.

*Charles L. Stang*
*Milwaukee, Wisconsin*

### Self-Updating Field Names

**TIP** When you are working with Microsoft Excel's database commands and functions, such as Find and Extract, the field names (column titles) must be exactly the same in the database range, the criteria range, and the extract range. The most obvious way to assure this is to copy the field names from the top of the database range, to the criteria and extract ranges. However, the database commands and functions will not work if someone later changes a field name in the database and neglects to recopy it to the criteria and extract ranges. Even if you always remember to recopy changed field names, another person using your spreadsheet may forget or be unaware of the potential problem.

To avoid this pitfall, simply use formulas at the top of the criteria and extract ranges. The formulas reference the field names in the database range. For example, suppose the name of the first field in your database range is in cell A2. If the name of the same field in the extract range is in cell F2, enter the formula **=A2** in cell F2. Now any changes to the field name in A2 will automatically update cell F2.

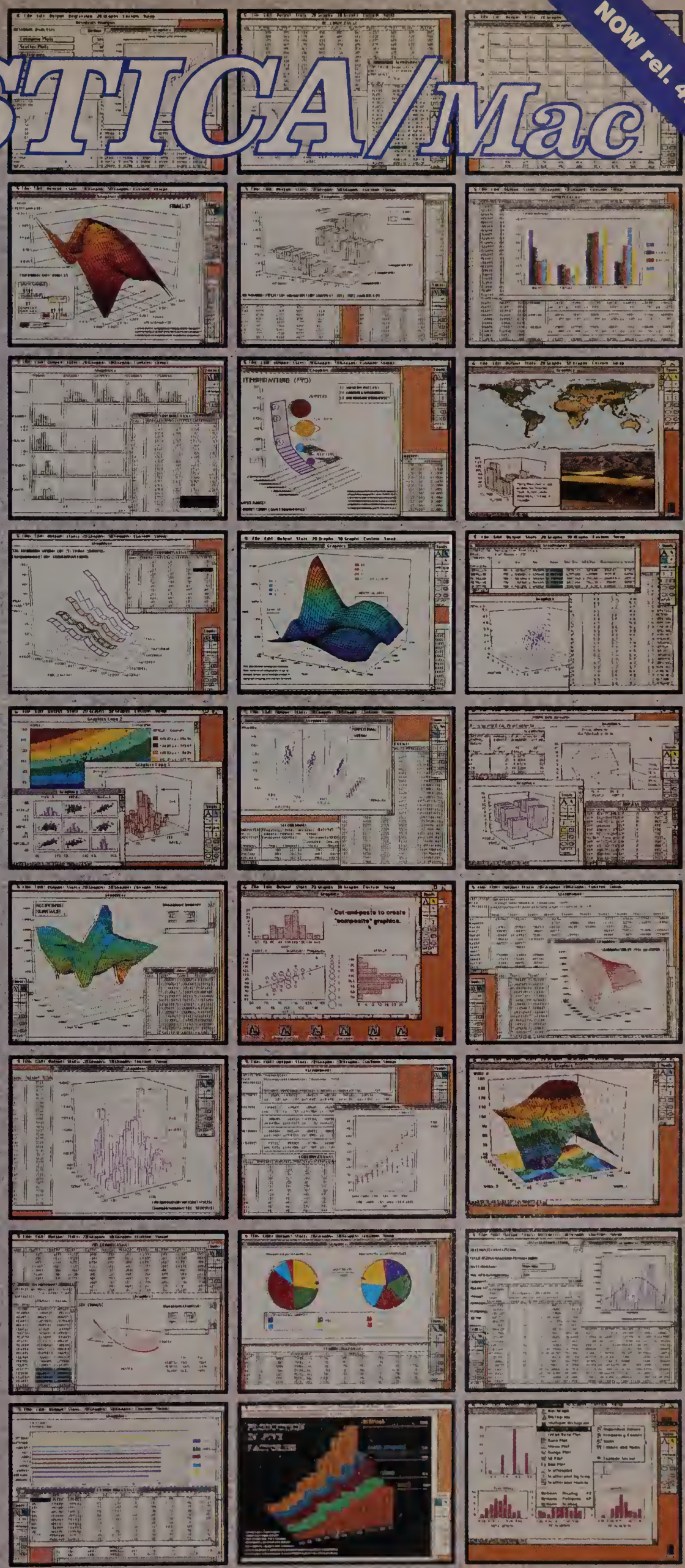
*Shane Devenshire*
*Walnut Creek, California*

We pay from $25 to $100 for tips published here. Send questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to *Quick Tips*, Lon Poole, at the address listed in *How to Contact Macworld* at the front of the magazine (include your address and phone number). All published submissions become the property of *Macworld*. Due to the high volume of mail received, we're unable to provide personal responses. **m**

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld Guide to System 7.1*, 2nd Edition (IDG Books Worldwide, 1993).

# STATISTICA/Mac

Now rel. 4.0



**STATISTICA/Mac™** A complete statistical data analysis system with hundreds of presentation-quality graphs integrated with all procedures ■ In-depth, comprehensive implementations of: *Exploratory techniques; Descriptive statistics; Frequency tables; Large selection of nonparametric tests; Stepwise multiple regression methods with extended diagnostics; General nonlinear estimation (with predefined or user-specified models); Logit/Probit analysis; General implementation of ANOVA/ANCOVA/MANOVA/MANCOVA (designs of practically unlimited complexity, repeated, nested, incomplete, random, changing covariates, contrast analyses, post-hoc tests, custom designs); Stepwise discriminant function analysis; Canonical analysis; Large selection of time series modeling techniques with forecasting; Factor analysis; Cluster analysis (incl. hierarchical, k-means, and 2-way joining); Reliability/Item analysis; Log-linear analysis; General survival/failure time analysis (incl. life tables, group comparisons, and regression models); Distribution fitting (a large selection of continuous and discrete distributions); Curve and surface fitting and smoothing (incl. spline, DWLS, NEXP, and others);* and much more ■ Manual with comprehensive introductions to each method and step-by-step examples (Quick Reference booklet explains all major conventions); balloon help ■ Extensive data management facilities: a super-fast spreadsheet of unlimited capacity with formulas (and *Publish and Subscribe*); merge/split files; "double identity" of values (numeric/text); BASIC-like data transformation programming language; Import/Export data and graphs from Excel, STATISTICA/w and other formats ■ Graphs integrated with all procedures (e.g., click on a correlation coefficient to produce the corresponding scatterplot and other graphs; click on a variable in the descriptive statistics table to produce a histogram and other graphs; click on an interaction effect in the ANOVA table to see a plot of interaction) ■ Large selection of 2-dimensional graphs: *Histograms (incl. multiple, clustered breakdowns, overlaid functions), Scatterplots (incl. multiple, weighted frequency, smoothed, function fitting), Multiple line and Range plots, Trend plots, Standard deviation plots, Data sequence diagrams, Contour plots, Box-and-whisker plots, Column plots, Bar graphs, Double pie charts, Scrollable dendrograms, Two-way joining plots, Curve fitting plots, Distribution comparison plots, Range plots, Probability plots, Amalgamation plots, Factor space plots, Casewise outlier and residual diagrams, ANOVA interaction plots, Multivariate (multiple) matrix plots, exploratory Draftsman plots with histograms, categorized (multiple) graphs,* and many other specialized plots ■ Large selection of 3-dimensional graphs: *3D surface plots (with data smoothing procedures, color or gray-scale shading, and projected contours), 3D scatterplots, 3D block scatterplots, 3D axis (space) plots, 3D spectral plots with adjustable planes, 3D line/ribbon plots, 3D sequence block plots, 3D histograms, 3D surface-smoothed frequency plots, and 3D range plots ("flying boxes")* ■ All 3D plots displayed in true perspective, feature interactive real-time rotation facilities (incl. continuous rotation) ■ Extensive graph customization options: all structural aspects of graphs (axes, scaling, patterns, colors, sizes, styles, regions, perspective, rotation, fitted functions, etc.); MacDraw-style tools with specialized "objects;" hi-res. graph and artwork embedding; page layout/preview; dynamic rulers ■ All output displayed in Scrollsheets™ (dynamic, internally scrollable tables: all numbers can be instantly converted into a variety of on-screen customizable, presentation-quality graphs) ■ All contents of Scrollsheets can be saved as data and used for input, or be exported ■ Flexible facilities to perform analyses on specific subsets of data ■ Extremely large analysis designs ■ Unlimited size of files ■ Extended precision ■ Unmatched speed (e.g., on a Mac IIfx, arbitrary rotation of a surface with 1000 points takes 1 second; correlation matrix 50x50 with 100 cases—less than 3 seconds; transposing a 5000 data points file—less than 2 seconds) ■ Full support for System 7 ("savvy") incl. *Publish and Subscribe,* Apple events, balloon help, "drag and drop," 32-bit, etc. ■ Price: **$695.**

**Quick STATISTICA/Mac™** A subset of STATISTICA/Mac ■ All basic statistical modules of STATISTICA/Mac *(Basic and Descriptive Statistics, Frequency tables, Exploratory data analysis, Nonparametrics, Distribution Fitting, Stepwise multiple regression; ANOVA/ANCOVA)* ■ Manual with comprehensive introductions to each method and step-by-step examples (Quick Reference booklet explains all major conventions) ■ All data management facilities of STATISTICA/Mac (including interactive rotation of all 3D graphs, extensive on-screen graph customization facilities) ■ Price: **$395.**

**Windows versions** also available (can exchange data with Macintosh versions): STATISTICA/w™ **$995**; Quick STATISTICA/w™ **$495.**

Domestic sh/h $10 per product; please specify type of computer with order; 14-day money-back guarantee.

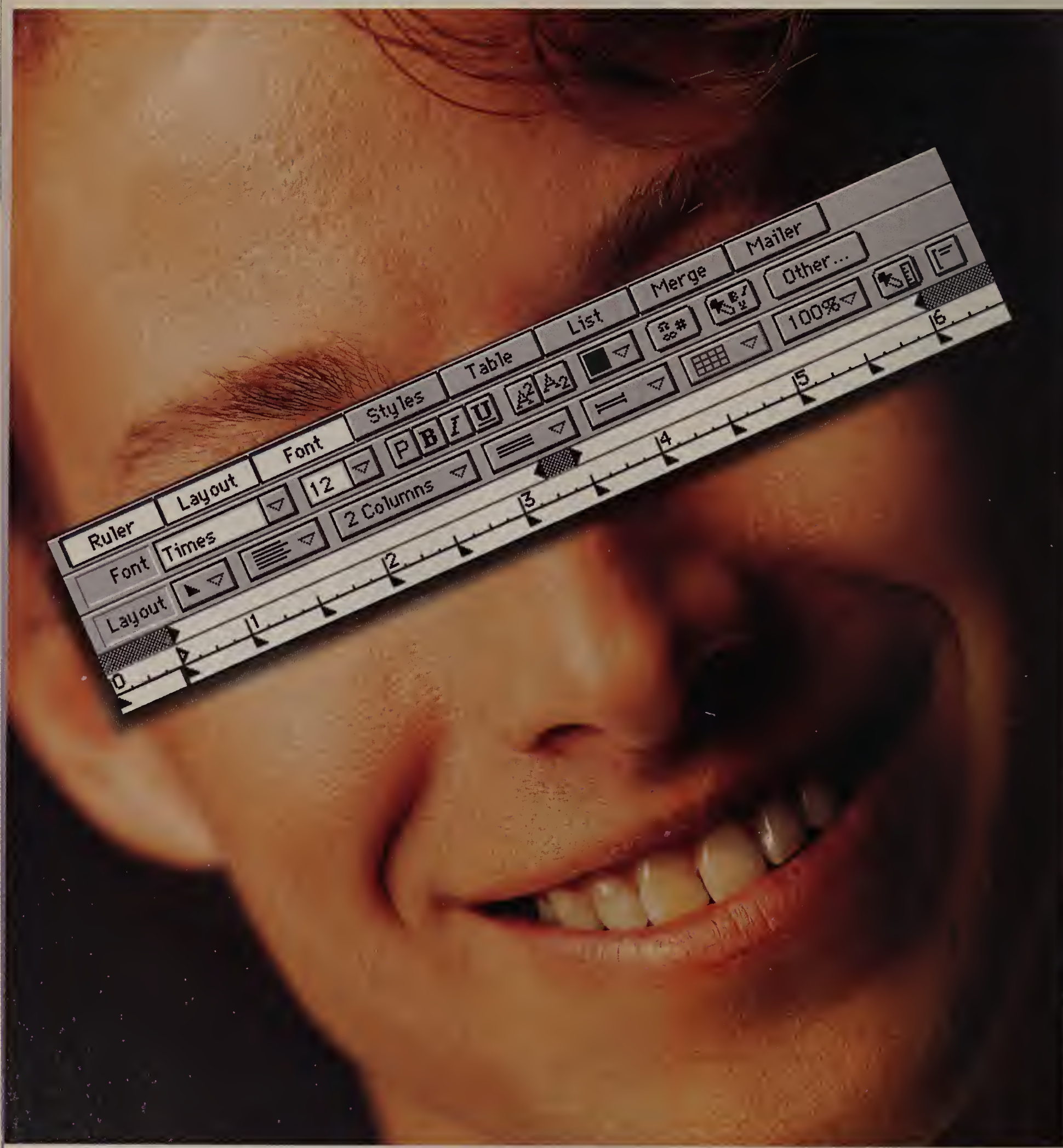
**Circle 99 on reader service card**

**StatSoft™**

**2325 E. 13th St. • Tulsa, OK 74104 • (918) 583-4149**
**Fax: (918) 583-4376**

**Overseas Offices: StatSoft of Europe** (Hamburg, FRG), ph: 040/4200347, fax: 040/4911310; **StatSoft UK** (London, UK), ph: 0462/482822, fax: 0462/482855; StatSoft Pacific (Melbourne, Australia), ph: (03) 663 6580, fax: (03) 663 6117; **StatSoft Canada-CCO** (Ontario), ph: 905-849-0737, fax: 905-849-018; **StatSoft France** (Paris), ph: (1) 45 66 97 00, fax: (1) 45 66 06 51; Available from other Authorized Representatives worldwide: Sweden: AkademiData Scientific AB ph: 018-210035, fax: 018-210039; Finland Statcon Oy ph: 24-334678, fax: 24-333867, Belgium: Texma Newtech 10 61 16 28, South Africa: Osiris Technical Systems 12-663-4500; Japan (Macintosh): Three's Company Inc., 03-3770-7600, Japan (Windows): Design Technologies, Inc., 03-3667-1110.

StatSoft, STATISTICA/Mac, Quick STATISTICA/Mac, STATISTICA/w, Quick STATISTICA/w, and Scrollsheet are trademarks of StatSoft, Inc., Macintosh, Mac IIfx, Excel and MacDraw are trademarks of their respective companies.




*Suggested retail price. Reseller prices may vary. You must own a competing word processor with a suggested retail price of $249 or more.
Offer good in the United States and Canada only. All trademarks are property of their holders. ©1994 WordPerfect Corporation. All rights reserved.

# Here's the perfect upgrade offer.

Now there are two great reasons to upgrade to new WordPerfect® 3.0 for the Macintosh® today:

- **$99* special upgrade price for users of competitive word processors.**
- **Get the Random House Webster's Electronic Dictionary and Thesaurus, College Edition for just $49—a 50% savings—when you upgrade.**

To get this new upgrade, visit your reseller or fill out this order form and mail it. For faster service, fax to (801) 228-5277, or order by phone at (800) 526-7820.

WordPerfect®

Name_____
Company Name_____
Address_____
City_____ State_____ Zip_____
Daytime Phone (_____)_____
Current Word Processor is_____ Version_____
My License Number is_____
Credit Card Number_____
Expiration Date_____
Cardholder's Signature_____

Please send me _____ copies of the $99 WordPerfect 3.0 for the Macintosh upgrade. (Plus $4.50 shipping and handling.)

Please send me _____ copies of the half-price Random House Webster's Electronic Dictionary and Thesaurus, College Edition. ($49 plus $4.50 shipping and handling.)

$_____Total cost

☐ My check or money order is enclosed.

☐ Mastercard ☐ Visa ☐ American Express

*Direct order from WordPerfect Corporation. Or visit your reseller—reseller prices may vary. Offer good through 9-30-94.
WordPerfect is a registered trademark of WordPerfect Corporation. All rights reserved. ©1994 WordPerfect Corporation. WHMAA

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

# BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 36 OREM, UT

POSTAGE WILL BE PAID BY ADDRESSEE

WordPerfect

Priority Orders Processing Q2300
WordPerfect Corporation
1555 North Technology Way
Orem, UT 84057-9912

Click the button. It's so simple. Click. It's the easiest way to get things done. Which is

**Our ruler bars give you a whole new way to look at formatting.**

why new WordPerfect® 3.0 for the Mac® puts all the things you want from your interface in your face. Giving you more buttons to click than any other word processor. So features are easy to find. And use. Want to change your text formatting? Click. Apply a style? Click. Create a table? Click. Then you can bring up a different bar with all the table functions you want. Borders, editing—even math functions—it's all right there. Click. Our customizable button bars put your favorite tools right there, too. Like spell checking. Grammar checking. Our integrated drawing program. Whatever you want. There's even buttons for common tasks like bulleted indents. So you'll seldom have to do anything. Besides click. (And type, duh. This is a word processor.) But you can do other cool stuff, too, like run QuickTime.™ Or WordPerfect native on the Power Macintosh.® So visit your local reseller or **call us at (800) 526-7820 for our $99* competitive upgrade.** If the number was nine buttons shorter, it'd be as easy as our interface. Click.

**Word processing that gives you the power to express yourself.**

WordPerfect®
**macintosh®**

EDITED BY ELIZABETH DOUGHERTY

# Networks

THE LATEST IN CONNECTIVITY AND COMMUNICATIONS

## PowerPC Server Applications Arrive

POWER MAC SOFTWARE publishers are announcing applications for the PowerPC-based Workgroup Servers that can run many times faster on the Workgroup Servers than on any 680X0 Mac server, but they've only scratched the surface of the application possibilities.

Network application updates accompanied last month's Workgroup Server announcements, with publishers claiming big speed gains (see *Networks* news, July 1994). For instance, Dantz Development's Retrospect Remote 2.1, which comes bundled with the WS 8150 and 9150, operates up to five times faster than its predecessor. Aldus's Color Central 2.1 (due by summer), an Open Prepress Interface and printer server application, performs two to four times faster under PowerPC. And Aldus's TrapWise 2.0 will operate at three to eight times the speed of the trapping application running on a 680X0 Mac. In the world of databases, Canto's Cumulus PowerLite 1.2 ($199) and Cumulus PowerPro (five users $1495) both offer a 200 to 300 percent speed boost over previous versions of those database managers; and EveryWare Development's Butler 1.3 ($1695; due in July) will bring users three to four times the speed of 680X0 Mac versions.

The performance gains sound impressive, but the truth is that the full potential of the new Workgroup Servers for server-based and client/server applications remains a mystery to developers. For example, Dantz discovered that Retrospect Remote 2.1 runs faster using compression and encryption than it does nonencrypted and noncompressed. So far nobody knows why.

Because developers are still learning the ropes, it's hard to pinpoint categories of applications likely to benefit from PowerPC's qualities. One thing is clear: if an application relies heavily on the AppleTalk protocol stack or other Mac OS–based networking capabilities, such as AppleShare or Apple File Sharing, don't expect much of a speed boost until Apple converts its AppleTalk protocol stack to run in native PowerPC code instead of in 68040 emulation. One product that won't have to wait for Apple's conversion is ACI US's 4D Server Universal 1.0, due this summer. 4D relies on the company's own implementation of AppleTalk, and ACI US has already rewritten it in native PowerPC code.

JEFF BRICE

The direct memory access (DMA), instruction caching, and RAM caching that are possible with the PowerPC, speed AppleTalk a little but not enough to overcome AppleTalk's fundamental speed limit. Apple acknowledges that the fastest networking applications will be based on other networking protocols, like TCP/IP or Novell's IPX, which boast much higher theoretical speed limits. (AppleTalk maxes out at 256 Kbps, while IPX and TCP/IP have proven themselves at much higher speeds.)

When developers and Apple have native software, the PowerPC could not only change the way existing applications are implemented, but also create new classes of networking applications that weren't possible under the power of the 68040. For instance, Aldus has announced Open Prepress Environment 1.0, a workflow manager for prepress applications slated to ship in the fall.

ACI US, 408/252-4444; Aldus, 206/622-5500; Canto, 415/431-6871; Dantz, 510/253-3000; EveryWare, 905/819-1173.—MARGIE WYLIE

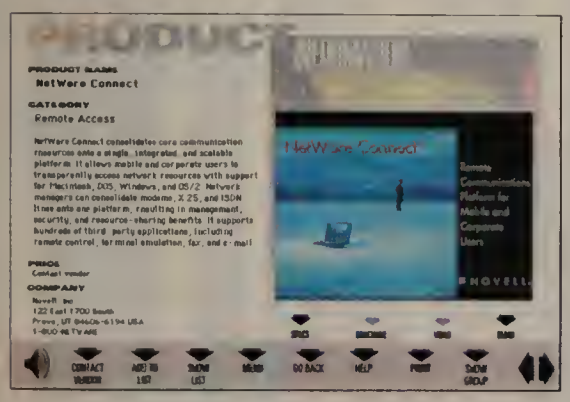
# Two for Networked Faxing

TWO RECENTLY INTRODUCED PRODUCTS allow users to share a modem for exchanging faxes. PSI's Faxnetwork server software ($99) turns any Mac on the network into a nondedicated fax server for any Class 2 modem. Client Mac software ($225 for five users) sends fax jobs to the server where they are spooled, processed, and sent, quickly freeing client Macs for other uses. For convenience, the server can also print out all incoming faxes on arrival.

4-Sight's Small Site ($995 for ten users, including a Zoom VFX V.32bis modem) lets Macintosh users fax multiple documents simultaneously from an application you call up with a keyboard command. Processing and logging happen locally. LineShare Lite from Stalker Systems, which is bundled with Small Site, allows the modem to be shared between fax and data applications (such as ARA). PSI Direct, 408/559-8544, 800/622-1722; 4-Sight, 515/224-0211.
—MARGIE WYLIE

# CD-ROM Network Guide

THE NETWORK SOLUTIONS GUIDE TO Mac network hardware, software, and services, once published by Apple Computer, is available from an offshoot of Pacific Bell in a new guise, as a CD-ROM. The first one's free, kids, until July 31. Thereafter it's $499 for four issues of the quarterly, called Re:Source Network Solutions. Each issue includes interactive articles, an extensive product-and-service database, collected spec sheets, and the option to order any listed product through an associated system integrator. Later this year look for an online version. Pacific Bell Information Services, 415/ 543-7593, 800/303-7247.
—NANCY E. DUNN



The Re:Source CD catalogs network products.

RICHARD RETHEMEYER

Cabletron's communications hub has room for up to 28 modems.

# Modems Plug in to the Hub

CABLETRON SYSTEMS AND XYLOGICS have teamed up to develop a communications server that offers up to 28 high-speed modems and supports AppleTalk Remote Access Protocol (ARAP). Xylogics' Modmim, a $23,900 module that fits into Cabletron's multipurpose hubs, comes with 4 built-in V.32bis modems and room for up to 12 internal modems, which are priced separately. The remaining 4 serial ports can support up to 16 additional external modems, so you can use your existing inventory of modems or add new devices.

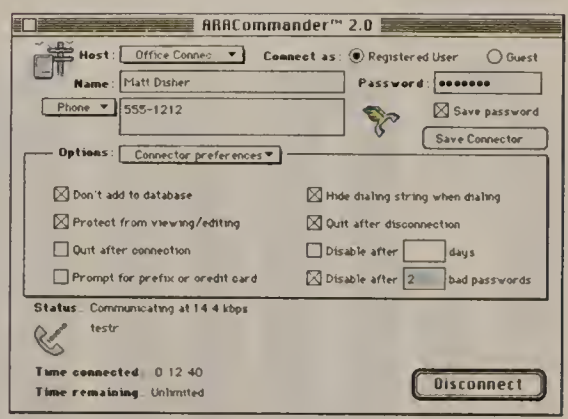
The Modmim's built-in ARAP support lets Macintosh users dial in using Apple's ARA client software version 1 or 2. The module also supports common Unix- and Intel-based PC protocols, including SLIP (serial-line Internet protocol) and PPP (point-to-point protocol). It can be managed via Simple Network Management Protocol, and it offers dial-back security. Cabletron Systems, 603/332-9400.—MARGIE WYLIE

# ARA Made Easy

FOR ONLY A FEW BUCKS PER CLIENT, Apple Remote Access administrators can nurse the technologically hopeless and keep would-be intruders at bay while sharing the network's wealth with even temporary users.

Trilobyte Software's ARACommander 2.0 (1 user $35, 100 users $675) is a commercial upgrade of a respected shareware utility that adds a feature-rich, flexible, and secure interface to existing ARA client software (versions 1 and 2).

For users, the utility's control panel provides an easy way to automate dial-in times, application launch, and disconnection. Network administrators can use ARACommander 2.0 to create Connectors, small custom applications that execute log-ins. You can set up a Connector to dial a server automatically at scheduled times, launch applications, perform AppleScripts, and automatically disconnect after a specified idle time. Connectors also let administrators hide the network phone number, account name, and password from clients, as well as build in a self-destruct date. Connectors can disable themselves after several incorrect password attempts. Trilobyte Software, 513/777-6641.—MARGIE WYLIE



ARACommander automates ARA connections.

## IN BRIEF

■ **For Sun Servers** Updated uShare 4.0 server software, which makes Sun Microsystems servers look and act familiar to Mac users, offers improved performance, supports AFP 2.1, and includes Mac-based administration. Built-in application mapping allows assigning double-clickable Mac icons to Unix and MS-DOS documents. Version 4.0 ranges from $595 for one user to $1395 for any number of Mac clients ($295 for upgrades). Information Presentation Technologies, 805/541-3000.

■ **eNote for the Mac** This summer E Ware Corporation plans to ship a Mac version of eNote, its Windows E-mail program, which displays a small, handy palette of buttons on the desktop for sending messages without pulling down a menu. About $200 for five users. 212/564-7791, 800/743-8645.

■ **X-Windows Update** An add-on module for White Pine Software's Mac 5.1 X-Windows client emulator, eXodus eXpress, lets eXodus users dial in to an X-Windows server at a speed that the company claims rivals Unix remote-access protocols, like SLIP and PPP. $99 per client module, plus $99 per module for each Unix host. Also due in late summer: eXodus for Power Macintosh ($259; $75 as an upgrade), a PowerPC native application. 603/886-9050.

BY MARTHA STRIZICH

## Public online services offer low-cost ways to link far-flung offices

A decade ago, your company had to lease a private phone line to connect its mainframe computer with the terminals and computers at its branch offices. Branch employees probably used low-speed lines to access the mainframe at speeds of 9600 bps to 56 Kbps. The data processing center may have leased an entire T1 circuit that funneled the traffic flowing in from the branches to a single 1.54-Mbps pipeline.

Today, most businesses still use private-line wide area networks to send data between far-flung locations. The reason: private lines provide maximum control over network resources, a high level of data security, and unlimited usage at a fixed price.

But the corporate computing environment is changing. The terminal-to-host scenario is becoming a thing of the past. LANs are becoming the norm. And connecting several LANs into a single, enterprise-wide network is becoming mandatory for companies that do business at more than one location. Network managers face the challenge of finding cost-effective methods to integrate their LANs. Network managers now have an alternative to dedicated private lines: public data services.

Public data networks use their own network-based services and equipment to route your data traffic along with traffic from other customers over a shared network facility.

A smorgasbord of public data services with names like *frame relay* and *switched digital* are now offered by long-distance carriers such as AT&T (201/606-2000) and Sprint Corporation (404/859-5000), local carriers such as Bell Atlantic (215/963-6000) and Pacific Bell (415/542-9000), and value-added network providers such as CompuServe (614/457-8600) and Infonet Services Corporation (310/335-2600).

The key to choosing the right service is to understand the LAN applications your company plans to run over your WAN. Before you start shopping, you should consider the following.

- Your connectivity requirements. How many LAN locations are you connecting—two, three, or more? Does each location need to connect to each other location in an any-to-any configuration? Do you plan to install network connections with customers or suppliers outside your company? Do each of your branch locations need to connect only to your headquarters office, or does each branch need to connect to each other branch in an any-to-any (full-mesh) configuration?
- Your volume of usage. On average, do your users transmit small, medium, or large files across the network? How much time does it take to transmit a typical file?
- Your data-transmission frequency. Is network traffic constant or intermittent? Do users send and receive files over the network all day long or only occasionally?
- Your need for speed. Do users send large image files over the network that will choke at slow speeds? Do they send database queries that require rapid response times? Or are most users transferring small files and sending electronic mail?
- Your disaster-recovery needs (automatic rerouting). Is a portion of your network traffic mission-critical? Will your company's business suffer if a network connection fails and your data is not automatically rerouted? Are you paying extra for disaster-recovery services?

Now consult the table "Where Public Data Services Make Sense" to see which data services match up best with your company's WAN needs.

- If you already have a private network in place, you might want to consider adding frame-relay or switched-digital connections at your branch locations but leaving your backbone network intact.

# CONNECT YOUR

• If you're sending files from your remote offices back to your main office just a few hours each day, a switched-digital service is an economical choice.

• If you plan to connect the LANs at, for example, each of your four offices into a one-to-any (mesh) network, a frame-relay solution is a good bet.

• Or, if your company needs to exchange information regularly with its customers, business partners, or suppliers, a TCP/IP network could be your solution.

To understand the applicability of each type of service, consider their strengths and weaknesses.

# LANs

**Switched-digital services** Switched-digital services (sometimes called *digital dial-up* services) typically cost less than private lines if your data traffic averages less than two hours per day and your sites are widely separated.

Switched services work like regular voice calls. To set up a switched call, you simply dial a predetermined phone number and start sending data. The beauty of this system is that you're charged only for the bandwidth you need, only when you need it. A typical switched 56/64 Kbps (commonly called just switched 56) call from New York to San Francisco will cost you between $7 and $10 per hour—the same as or slightly more than what a voice call costs.

Switched services are a natural for remote offices that can't justify a private line or for telecommuters whose bandwidth needs exceed the upper limits of analog modem connections. Switched services can also augment private-line connections during peak traffic times or dial backup bandwidth in case a private line goes down.

If you plan to interconnect LANs using switched-digital circuits, you'll need a router or an inverse multiplexer to connect to the WAN. Inverse multiplexers let users aggregate multiple switched 56 circuits into temporary high-speed pipelines. Instead of using individual 56 Kbps connections, for example, inverse multiplexers dial up as many as 24 56-Kbps circuits to bridge LANs or back up private lines.

If you are connecting individual Macs to switched services, you need to plug a Data Service Unit/Channel Service Unit (DSU/CSU) or an Integrated Services Digital Network (ISDN) terminal adapter into your machine.

Carriers offer switched services in bandwidths of 56, 64, 384, and 1536 Kbps. You can sign up for these services by calling either your local phone company or your long-distance carrier. But check prices carefully; in some cases you may find it cheaper to use your local phone company's switched service to connect to your long-distance carrier than it is to sign up for switched services directly from your long-distance carrier.

**Frame-relay networks** Frame-relay services and LAN internetworking are considered by some people to be a match made in heaven. That's because frame relay, an updated version of X.25 packet switching, economically connects multiple sites in an any-to-any configuration and efficiently handles the high-burst data transfers that are typical of LAN traffic, imaging, and client/server exchange. Typical uses include financial data trans-

fer, CAD/CAM imaging, and forms processing. Frame-relay networks are also a good choice for critical applications because they automatically reroute data in case of network failure.

Frame relay works by breaking data streams into packets and then routing the packets to their network destinations over logical connections called *permanent virtual circuits* (PVCs). A company must set up PVCs between its different network locations before any one location can send or receive data from any other location. Requiring that a company predefine PVCs between locations before any communication can take place is what makes the data on your public frame-relay network just as secure as the data on your private-line network.

PVCs also make frame-relay networks cheaper to use than private lines for internetworking three or more LANs. That's because a single physical connection into a frame-relay network supports multiple logical connections into the network. A company connecting five locations into an any-to-any frame-relay network, for example, pays for one connection into the network for each of its five locations, for a total of five connections. A company connecting the same five locations into a private-line network, on the other hand, must pay for ten network connections, since each logical connection on a private-line network requires a physical connection as well.

To get started with frame relay, you need frame-relay-capable routers. Major vendors sell routers that support frame relay and AppleTalk protocols. Some companies report that using a frame-relay network costs 20 to 30 percent less than using a private-line network—enough to pay for the investment in routers during the network's first year of operation. Carriers such as AT&T, CompuServe, and WilTel (918/588-3210) offer frame-relay services at connection speeds ranging from 56 Kbps up to T1.

**X.25 networks** Frame relay's predecessor, X.25, is a low-speed packet-switching technology that is still widely used today for interactive, transaction-oriented applications such as order entry and credit card verification. Because of X.25's large network overhead, most X.25 networks operate at top speeds of 56 Kbps—too slow to effectively handle LAN-to-LAN traffic.

But don't rule out X.25 networks if you just plan to send electronic-mail messages and small files across wide area links. Companies like AT&T and Sprint use worldwide X.25 networks to provision their AT&T Mail and SprintMail global electronic-messaging services.

## Where Public Data Services Make Sense

| | Frame Relay | Private Line | Switched Digital | TCP/IP | X.25 |
|---|---|---|---|---|---|
| **Connectivity** | | | | | |
| One-to-one | ○ | ● | ● | ○ | ○ |
| One-to-any | ● | ○ | ● | ● | ● |
| Any-to-any | ● | ○ | ○ | ● | ● |
| **Traffic volume** | | | | | |
| Low | ● | ○ | ○ | ● | ● |
| Medium | ● | ○ | ● | ● | ○ |
| High | ○ | ● | ● | ○ | ○ |
| **Traffic frequency** | | | | | |
| Occasional | ● | ○ | ● | ● | ● |
| Frequent | ● | ● | ○ | ● | ● |
| **Speed** | | | | | |
| Low | ○ | ● | ○ | ● | ● |
| Medium | ● | ● | ● | ● | ○ |
| High | ● | ● | ● | ● | ○ |
| **Automatic rerouting** | ● | ○ | ○ | ● | ● |

*● = appropriate use of this service; ○ = inappropriate use of this service.*

Also consider X.25 if you communicate with offices overseas. Its error-checking protocols make it effective in areas of the world where circuits are noisy and transmission errors are likely to occur.

**TCP/IP services** Recently, service providers like Advanced Network & Services (914/789-5300), Infonet, and Sprint have started offering managed TCP/IP-based routers that let companies connect their LANs to their customers' or suppliers' LANs or build customized TCP/IP networks via the public Internet.

The advantages of TCP/IP include the ability to connect dispersed LANs across diverse networking environments and to provide access to the resources of the global Internet. (For more information, see "Linking AppleTalk Workgroups over TCP/IP," *Macworld*, April 1994.) Most likely to benefit are companies that need to transfer files or exchange E-mail with their suppliers, customers, or trading partners across the country or around the world, since the TCP/IP communications protocol lets users easily connect incompatible E-mail systems and LAN protocols across wide area links.

Their disadvantages include concerns that subscribers on the public Internet could gain access to an organization's private network resources. Managed services tackle the security issue head on. Designed for companies that have no interest in the public Internet but want LAN-to-LAN TCP/IP connectivity, these services set up virtual private networks for companies by restricting users' access to all but certain predefined network locations.

Consider the offerings of the different Internet service providers carefully if you're thinking of using TCP/IP as your WAN transport system. Offerings and fee structures vary between providers.

### Choosing a Provider

Once you have homed in on the data service that suits your LAN applications, it's time to look for a service provider. It's also time to decide how much control you need—or can provide—over your WAN links. Do you have the staff and the budget to manage your own network, or will it be more economical for you to pay a service provider to manage your network?

For a fee, most service providers will completely take over the design and implementation of your network, including arranging for access lines from the local phone company and installing the equipment you need at each of your network locations. Once your network is operational, you can sign up for round-the-clock, seven-days-a-week network monitoring and management services.

For example, Sprint recently started offering managed network services for its SprintNet (X.25), SprintLink (TCP/IP), and Frame Relay Services. Depending on the complexity of your router setup, Sprint will design and implement your network for a onetime fee ranging from $250 to $1000 per network node. Ongoing service charges include on-site router-maintenance fees of between $40 and $150 per month and router-management services of $240 per month, per router. The company has said it plans to offer managed network services for its private-line and switched-digital services by year's end. (Other companies offer similar services at similar rates.) m

MARTHA STRIZICH writes frequently about networking.

# Connecting LocalTalk Devices To Your Ethernet Is A Big Deal.

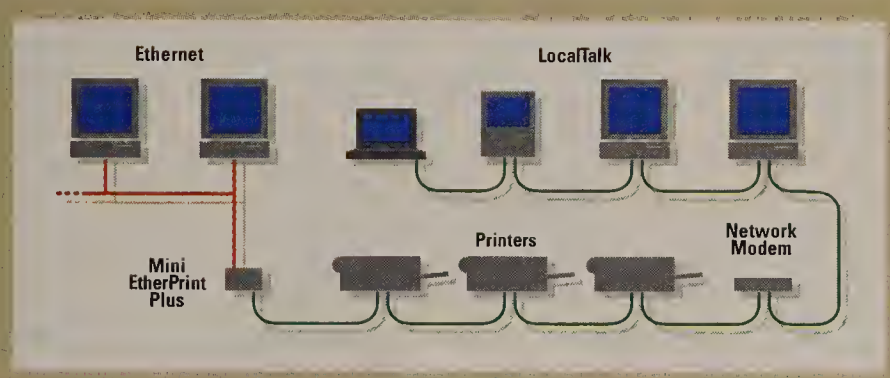
## Your Connector Doesn't Have To Be.

No Boundaries
**NO LIMITS**

### Introducing Mini EtherPrint™. Up To 8 LocalTalk Connections, New Compact Size.

Connecting LocalTalk printers and other devices to Ethernet has never been easier or less intrusive. The reason? Dayna, the very company that pioneered the technology with EtherPrint™, has made a small improvement that promises big benefits.

It's called Mini EtherPrint, and it's the ideal way to provide a simplified Ethernet connection for as few as 1 or 2 LocalTalk printers to as many as 8 LocalTalk devices of any variety.




*Mini EtherPrint products are ultracompact plug-and-print solutions offering Ethernet connectivity for LocalTalk devices. Mini EtherPrint supports 1 or 2 devices, Mini EtherPrint Plus supports up to 8.*

Mini EtherPrint connects to your printer with no set-up routines or start-up sequences. Just plug and print. For easy trouble-shooting, we've included power, activity and link status lights, as well as a handy reset switch. And if there's a power outage, Mini EtherPrint will restart and restore its connections automatically. We also include SecurIt™ protection software to prevent unauthorized access to network modems, color printers or other LocalTalk devices.

Mini EtherPrint may be the smallest connector around, but it offers the biggest cost advantages. A competitive price per connection, Lifetime Warranty and 24-Hour Replacement Program make our value especially tough to beat.

Prove to yourself that the challenge of connecting more LocalTalk devices to your Ethernet is smaller than you thought. Choose Mini EtherPrint from Dayna. For more information, call 800-443-2962 ext. 538 or use our 24-hour FAX Response System.

**FAX Response: 801-269-7340, Doc.#1303**

EtherPrint, Mini EtherPrint and No Boundaries, No Limits are trademarks of Dayna Communications, Inc. All other product names are the trademarks of their respective holders.
©1994 Dayna Communications, Inc., Sorenson Research Park, 849 West Levoy Drive, Salt Lake City, UT 84123

**Circle 161 on reader service card**

# Okay, so what's on your Xircom Pocket EtherTalk Adapter?

**Jill Byron**
**Account Executive**

My PowerBook, which I take everywhere.

My LAN which I can finally get on!

Access to all the network applications that don't fit on my PowerBook.

E-mail thanking Sean for my Xircom Pocket EtherTalk Adapter.

My Syquest and CD ROM drives daisy-chained on my SCSI port.

Phantom Power cable so I never have to worry about packing an AC adapter.

The same dependable Xircom brand name as all the PC notebook users have on their LAN adapters.

My calendar appointments from the server.

Xircom's phone number in case someone asks for a recommendation.

A lifetime warranty and upgrade policy.

**Sean Scullion**
**MIS Director**

The Xircom name.

Xircom guaranteed compatibility.

Choice of 10Base-T or thin Ethernet via the SCSI port.

10Mbps Ethernet vs. AppleTalk's 230 Kbps access to all my file servers.

Special pass-through SCSI feature for Syquests, CD ROMS and other peripherals for my PowerBook users.

Phantom Power cable that draws from the Apple Desktop Bus so I don't get hassled about AC adapters.

Reversible SCSI cable so both my Powerbook and Macintosh desktop users can use it.

30-day free product evaluation and 37% discount when I purchase the evaluation unit.

Lifetime warranty and upgrade policy.

All my PowerBook users.

**Xircom**
The Mobile Networking Experts.

For more information on the Xircom Pocket EtherTalk™ Adapter, call 1-800-438-4526 ext. 31R.

Xircom U.S. Headquarters: 818-878-7600. Xircom Europe NV: +32/(0)3 360.38.11. Xircom Asia: +852 525-2078.
©1994 Xircom, Inc. Xircom is a registered trademark of Xircom, Inc. EtherTalk is a registered trademark of Apple Computer, Inc.
All other brand names or marks are used for identification purposes and may be trademarks of their respective owners.

**Circle 269 on reader service card**

BY CARY LU

# PowerBook Notes

## Frequently Asked Questions

SOME QUESTIONS—NO MATTER HOW many times they're answered—seem to get asked over and over again, either by new users or by people who haven't found the right resources. One of these resources is Apple's technical-support line for Macintosh users: 800/767-2775. With the cooperation of the support-line staffers who field such queries, I compiled the most frequently asked questions and answers about PowerBooks.

**Q.** *Even when it's plngged into the AC adapter, my PowerBook does not always start when I press the power-on button. What should I do?*

**A.** Try a hardware reset. For 100- and 500-series PowerBooks, simply unplug the AC adapter and remove the battery, leaving it out for ten minutes. For Duos, press and hold the back power button for four to five seconds.

**Q.** *What is the correct system enabler for my PowerBook?*

**A.** Models 100, 140, 145, 145B, and 170 require no enabler. The other 100-series PowerBooks use Enabler 131 (131 replaces two earlier versions—Enabler 111, which came with the PowerBook 160 and 180, and Enabler 121, which came with the PowerBook 165c). The 200 series (Duos) use PowerBook Duo Enabler 1.0 (replaces Enabler 201, which was shipped with the early Duos 210 and 230). The 500-series PowerBooks use PowerBook 500 Series Enabler 1.0.2. The latest enablers are available through the usual sources: System Update releases, new system software releases, and many online services. You

can also get them with the System Update 3.0 for $10 (credit card only); call the Apple Order Center, 800/769-2275. Although older enablers will still work, it is a good idea to update to the most current one.

**Q.** *Why does my PowerBook sometimes become quite warm to the touch?*

**A.** PowerBooks can heat up during operation, especially on the bottom beneath the keyboard and around the battery compartment during charging. To avoid overheating, leave the PowerBook display open and the feet down during operation, especially when using an external monitor. In some cases, a hardware reset (described above) may work.

**Q.** *How do I get a frozen cursor unstuck?*

**A.** First, wait a few moments to see if the PowerBook is just taking longer than expected to finish a task. If the cursor is truly stuck, restart the computer (see the manual for the correct procedure for your model). If the problem persists, you may have a conflict with a system extension; try booting while holding down the shift key, to turn off extensions. If this corrects the problem, you have to restore extensions one at a time to find the offending one and possibly change the order of extensions by renaming them. Or you may need to reinstall your system software because of a corrupted system file.

**Q.** *What shonld I do when I connect an external SCSI device to my PowerBook and I see a diamond icon with a nunber or I can't access SCSI-disk mode at all?*

**A.** Make sure that you are using the proper cable. When connecting SCSI devices to a PowerBook, use the off-white Apple SCSI System Cable or equivalent (part number M2538LL/A). When connecting the PowerBook to another Mac using SCSI-disk mode, use the dark gray SCSI Disk Cable (M2539LL/A), which has 30 pins at the PowerBook connector (the square end), while the peripheral/system cable has only 29 pins.

**Q.** *What does it mean when my PowerBook just stops and the screen goes gray?*

**A.** The computer may have gone to sleep. Press the shift key to wake it up. Or the battery may have completely drained, which also induces sleep mode. If so, plug in the power adapter, let the battery charge for 15 minutes, and then try to wake it up. If this still doesn't work,

*continues*

HEADS, IT'S REAL. TAILS, IT'S FAKE.

It's your choice. A little more than 50 percent of all business software in use today is pirated. If you buy it, you could end up with virus-ridden, phony software that has no documentation or product support.

Selling or copying pirated software without authorization is against the law, with severe criminal and civil penalties including imprisonment of up to five years, fines of up to $250,000, or both. If you suspect the sale or use of pirated software, call the BSA Anti-Piracy hotline:

(800) 688-BSA1 (2721)

Business Software Alliance

© 1993 Business Software Alliance. All rights reserved.

restart the PowerBook (see manual for directions for your model).

**Q.** *What do I need to use my PowerBook outside of North America?*

**A.** Apple's PowerBook AC Adapters automatically adapt for all common AC power voltages worldwide (90 to 260 volts). The power frequency (50/60Hz) does not matter. For many countries you will need a plug adapter, available at electronics shops, luggage stores, and airport shops. If you have a third-party AC adapter, check that its voltage range is appropriate for the country you're visiting.

**Q.** *Why does my PowerBook crash so often?*

**A.** Two likely possibilities: software conflicts or faulty third-party RAM. First make sure you are using the latest version of all your applications. You may need to replace your system software by doing a clean install from your system software floppy disks: (1) rename your System Folder to "old"; (2) take the Finder file out of that System Folder and put it on the desktop or in the Trash; (3) insert the Install Me First disk and restart; (4) choose Easy Install; (5) after system installation, copy your personal software (control panels, extensions, and so on) from the old System Folder to the new one, and trash the old folder. If you have a third-party RAM card, have your local service technician remove it to see if that corrects the problem.

**Q.** *Why won't the battery recharge?*

**A.** Make sure the power adapter is plugged into a live socket. Select Battery (Apple menu); a lightning bolt appears over the battery symbol during charging and disappears when charging is done.

For a Duo with Type I batteries, be sure the battery is fully inserted into the computer. Type II or III batteries don't usually have this battery-contact problem, but if a Type II or III in a Duo 210, 230, or 250 doesn't seem to charge correctly, you need Duo Battery Patch, a free extension from the usual sources.

**Q.** *Why does my PowerBook go to sleep so soon after I stop using it?*

**A.** In the PowerBook control panel, move the Battery Conservation slider toward Maximum Performance. PowerBook control panel 7.2 and third-party software let you set the length of time before an idle PowerBook goes to sleep.

**Q.** *Why doesn't my PowerBook sleep?*

**A.** A PowerBook will not go to sleep (1) if there is background activity such as printing, file sharing, virus checking, or telecommunications; (2) if it's plugged into AC power and an external monitor is connected (it can dim the external monitor); (3) if AppleTalk is turned on in the Chooser; or (4) if "Don't sleep when plugged in" is checked in the Options section of the PowerBook control panel.

**Q.** *Why does my active matrix display have dots that never go away?*

**A.** An active matrix screen contains over 250,000 pixels. Because of the current manufacturing technology, a few defective pixels is common. If screen flaws interfere with your work, call the Apple technical-support line to find out if your screen qualifies for replacement (determined on a case-by-case basis).

**Q.** *Why does my screen seem so dark?*

**A.** You may need to adjust the brightness and/or contrast setting. To see if screen dimming has been activated, move the trackball/trackpad. Also, the screen automatically dims when the battery runs low; if this happens, plug in the AC Adapter. Some third-party power managers dim the screen at start-up; to inhibit this, check the settings appropriate for that software, or restart while holding down the shift key. Active matrix color screens do not have contrast adjustments (they don't really need them). Note, however, that all color screens are impossible to read in bright sunlight.

**Q.** *Why do I see flickering, shadowing, and faint lines on my passive matrix screen?*

**A.** Some flickering or shadowing is normal, but try adjusting the contrast and brightness, selecting Black & White in the Monitors control panel, or switching to a lighter desktop pattern (in the General control panel).

**Q.** *What should I do if my external monitor's screen is blank?*

**A.** Open the Monitors control panel. You should see images of two monitors: the PowerBook display and the external monitor. If you don't see the image of the external monitor, make sure the PowerBook is plugged into the AC Adapter, which is required for an external monitor. Make sure the video cable is securely connected and restart the computer. In the Monitors control panel, click (and hold) the Identify button. A large num-

*continues*

Silentwriter is a registered trademark of NEC Corporation. All other trademarks and registered trademarks are the property of their respective holders. The Energy Star emblem does not represent EPA endorsement of any product or service. Specifications subject to change without notice. NEC GSA#GS00K91AGS5241 © 1994 NEC Technologies, Inc.

Circle 15 on reader service card.

Power Tools for the Power Presenter

One stop shop for all major brands

SALES•LEASES•RENTALS

COLOR from $1,795

For the latest in color projection panels and projectors call the experts in LCD technology. Your satisfaction guaranteed or your money back.
Quick delivery via Fed-X or UPS.

Call for CATALOG 1 800 726 3599

Panelight DISPLAY SYSTEMS, INC.
101 The Embarcadero Ste. 100-A, San Francisco, CA 94105
Hours: 6:30 to 5:30 PST, 9:30 to 8:30 EST
VOICE: 415 772 5800 FAX: 415 986 3817

Circle 1 on reader service card

"The Best Mac Desk Ever."

NEW!

AS LOW AS $249

• Ergonomic
• Fully Adjustable
• Strong
• Guaranteed
• VAR Inquiries Welcome

agio™
BEAVERTON, OREGON

Free Catalog! 800.688.2446

| Phone 503. 690.1400 | FAX 503. 690.1423 | Europe 011.41.62.631026 | Japan 011.81.3.3583.0436 | ups

ber 2 should appear on the external monitor display.

**Q.** *How do I get my cursor to go to my external monitor? How do I invoke mirroring on my external monitor?*

**A.** Check the Monitors control panel for the presence of a second monitor. You can change the relative positions of the monitors by dragging either monitor icon, so that you can tell which direction to move the cursor to go from one screen to the other. Video mirroring (showing the same image on both screens) is set in the PowerBook Display control panel.

**Q.** *Why won't my PowerBook read a floppy disk that I formatted on my desktop Mac?*

**A.** Some extensions block reading floppies—restart and hold down the shift key until you see the message "Extensions Off." Then try reinserting the disk. Also, the disk may be damaged. Try formatting a floppy disk in your PowerBook and use that disk in your desktop machine. If that doesn't work, have your floppy disk drive tested for alignment.

**Q.** *I have an Express Modem installed. When I start up, why does the Fax Modem extension icon have an X through it?*

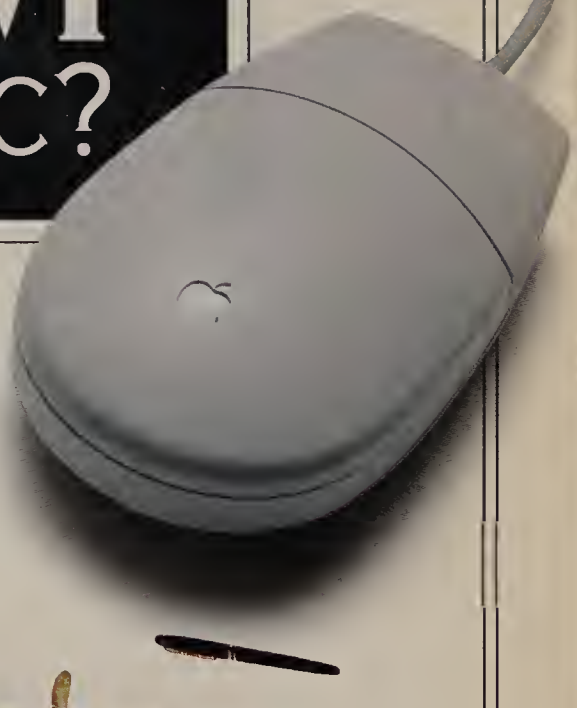
**A.** The Fax Terminal Pref file (located in the Preferences folder in the System Folder) may be corrupted. A temporary fix is to throw this file away and restart, which automatically creates a new preferences file. This problem was corrected in version 1.0.4 of the Express Modem software. The current version is 1.5, available from the usual sources.

**Q.** *How do I print to a StyleWriter from a Duo or a 500-series PowerBook?*

**A.** For PowerBooks with only one serial port (Duos and 500-series PBs), you must disable AppleTalk. Then tell the StyleWriter driver that you are using the modem port. If you have an Express Modem installed, set Express Modem to Off in the Express Modem control panel. If you have a PowerBook Setup control panel, set Modem to Normal. If you are having trouble printing to a StyleWriter from a Duo Dock, get a hardware upgrade from your local Apple Authorized Service Provider. AppleTalk must also be disabled if you want to use the printer port of the dock. **m**

CARY LU is a *Macworld* contributing editor who covers mobile- and remote-computing issues in this monthly column.

# WANNA SEE WINDOWS SCREAM ON YOUR POWER MAC?



So you finally get your hands on the hottest new Mac and what happens?

Somebody insists that you run Microsoft Windows™ applications.

Don't despair. Just double click on SoftWindows™ **and hang on tight**.

You see, SoftWindows not only lets you use your Mac as a Mac, it also lets you **run thousands of popular Windows programs**—as fast as a 486SX.

You can run DOS programs, too. Not to mention PC network applications such as NetWare, LAN Manager and TCP/IP.

How can SoftWindows be so utterly compatible? Because it **includes Windows 3.1 and MS-DOS® 6.2,** optimized to run at top speed.

And since both DOS and Windows are preinstalled, you don't have to put up with tedious installations.

With SoftWindows, you can copy and paste between PC and Mac applications. You can even **use Macintosh peripherals**—CD-ROMs, printers, modems and more—with PC programs.

Call us today at **800-848-7677 Dept. B**. Or visit your dealer. What you discover will blow you away.

SOFT WINDOWS

Windows Compatibility for the Power Macintosh.

*Insignia*®

*In Europe, call (44) 494 459426.*

**Circle 68 on reader service card**

# StreetSmart Makes Wall Street a Whole Lot Friendlier!

## Trade online with StreetSmart™ — now for Macintosh®

### Point, click, invest.

Now, at last, you can combine the power and accessibility of your Mac® with one of the most powerful investment software programs on the market.

With StreetSmart — new from Charles Schwab — you can actually act as your own broker. Just point to place a trade. Get real-time quotes. Pull Dow Jones news and analysts' opinions off the wire — and into your home.

### Place buys and sells like a Wall Street trader.

Click to pull down trading screens. Click again to review your portfolio. Chart price histories. Access 6,700 company reports. StreetSmart helps put you in control of your investments.

### Save 10% more every time you trade.

You can buy and sell stocks, options, bonds and over 700 mutual funds electronically — and save 10% off Schwab's already low commissions every time you invest.* Plus you'll save up to $25 more on your first StreetSmart trade.**

### Get StreetSmart for just $59 — or trade up to Schwab and get it free.

Just move $15,000 or more into a Schwab account between May 2 and August 31, 1994, and you'll receive StreetSmart, free.†

To place your StreetSmart order — or to take advantage of this limited-time offer — stop by one of our 200 offices or call us toll-free at:

1-800-435-9258 ext. 67A.

**Charles Schwab**

Helping Investors Help Themselves®

*StreetSmart's 10% commission is based on Schwab's current commission schedule and may be used with other offers at Schwab's discretion. **Trades must occur within 6 months of purchase. Applies to stock and option trades only. †Offer available for individual investors only. Limit one per customer. All trademarks or registered trademarks are the property of their respective owners. ©1994 Charles Schwab & Co., Inc. Member SIPC/NYSE. All rights reserved.

**Circle 277 on reader service card**

THE DESKTOP CRITIC

BY DAVID POGUE

# Not Your Father's BBS

*FirstClass systems: online services for the rest of us*

YOU KNOW WHAT A BBS IS, don't you? It's an electronic bulletin board system. At one end is a Mac Plus and a couple of phone lines in some teenager's bedroom. You, modem junkie, are at the other. You can dial in to the BBS at any hour. By typing commands, you can read Monaco 9-point text describing 32-bit-addressing schemes, download the latest version of MacArmyMan Pro, or post heated messages about the efficacy of mouseball cleaners.

Well, that's what a BBS *used* to be, back when the information superhighway was a couple of dusty bike trails. But times have changed. Courtesy of a remarkable program called FirstClass, the aforementioned BBS operators of America can now replace the boring scrolling text of yesteryear with nifty clickable icons, just like those in America Online or eWorld. The backdrops are colorful, the icons are customized, text comes in all sizes and colors, and there are witty sound effects at every turn. For the first time, you can use a BBS without a degree from MIT.

A FirstClass BBS is multitasking, too. Even as you're downloading, say, a Bart Simpson sound file from the BBS software library, you can simultaneously read messages, type in live conversations with other members, and explore the service. (Try *that* on America Online.) Actually, that's a bad example; on a FirstClass system, you can listen to a sound without downloading it.

The content of FirstClass systems is eye-opening, too; instead of merely serving as a canvas for political user-group mudslinging, these BBSs offer things like faxing, efficient E-mail, and access to the mother of all BBSs, the Internet. And on most FirstClass BBSs, people go by their real names (Bill Smith, Jenny Jones) instead of coy handles (Mac Stud, NoLifeGuy).

(SoftArc, the company that makes FirstClass, wishes to stress that its product's actual purpose in life is to be a corporate communications center, like QuickMail or something, and that 3000 companies use it this way, and that the explosion of FirstClass BBSs is merely an unexpected side effect of the program's stunning success in the business world. Duly noted.)

Here's a sampling of some interesting FirstClass systems; to find one in your own area code, visit the Macworld area of America Online, where I've posted a list of 500 FirstClass BBSs all over the world.

### digitalNation

If your mind is easily blown, put on a helmet before visiting this BBS. Its 28 high-speed phone lines connect you to services so varied and useful, they almost make CompuServe look like a garage sale. In my first whirlwind evening, I searched the recipe database for dishes containing prunes, downloaded the complete transcripts of the "Monty Python" TV shows, and sent a fax. Later, I unearthed the entire Bible, Frequently Asked Questions about Seinfeld, 12 complete Shakespeare plays, the transcripts of every speech ever uttered by President Clinton, Apple Product Information, months' worth of David Letterman Top 10 Lists, 4.5 gazillion shareware programs, and enough other surprises to turn me into a gibbering digitalIdiot.

You may have trouble believing this, but digitalNation's information is all well organized and easy to find. You'll definitely have trouble believing this: except for the call to Virginia, digitalNation is *free* (up to 20 minutes a day; you can pay for more access). What's more, if you use digitalNation, you've just stuck your toe into the meganetwork called the Internet; you get your own Internet address, and you have full access to the torrent of messages that gushes through the Internet every day. (Sysop, Bruce Waldack, bless 'im; voice 703/642-2800; modem 703/642-0453.)

### DesignLink

DesignLink is no digitalNation; it barely qualifies as a digitalSuburb. But despite its unassuming size, it's worth mentioning for the sheer cleverness of its purpose. It's a resource for art, design, desktop publishing, and photography types. Most of its shareware programs, imported Internet discussions, and announcements pertain to those creative pursuits: there's a calendar of art shows and contests, links to design-industry magazines and companies, and so on.

The heart of DesignLink, however, beats in its Portfolio folder, which makes brilliant use of a unique FirstClass feature. In this area, you double-click on the icons of actual artwork samples from photographers and designers. In seconds, the full-color picture appears on your screen. (You also have the option of downloading them at a low-res 72 dpi.) What an ingenious way for these artists to display their wares—and for clients to window-shop! (Free up to 20 minutes daily, $200 per year to put your artwork online; sysop, Ash Mehta; voice 510/930-6746; modem 415/241-9927.)

*continues*

### EastNet

EastNet is everything you ever wanted in a BBS—in 100 BBSs, actually. Its most noteworthy feature is that it links to other BBS systems. Several of EastNet's icons are actually gateways to such worlds as OneNet (a worldwide network of 300 FirstClass BBSs) and, of course, the Internet. Needless to say, you could spend a lifetime exploring all these spokes of the EastNet wheel, but some of the most interesting are Off White and Green (psychiatry), the Missing Children's Network (double-click to see the photos of missing kids), and InvestNet (with online graphs of individual stocks).

According to Michael Wechsler, his co-sysop Robert Knowles "needs some therapy; he's a file pack-rat." Translation: this BBS also has, quite probably, every Mac shareware program ever written. Everyone has access to 20,000 of them; for an extra $10 per year you can also access six CD-ROMs' worth; and Rob will hunt through his 25 *gigabytes* of programs if there's something special you're looking for. ($20 per year, $10 additional for Internet access; voice 718/575-1318; modem 718/767-0157.)

### Earth Spirit Online

If you get so addicted to this stuff that you never go out and enjoy the fresh air and sunshine, at least you can *read* about fresh air and sunshine. Earth Spirit is an extraordinarily comprehensive, coherent, upbeat environmental BBS. On it you'll find discussions, announcements, and files that touch every conceivable aspect of recycling, research, environmental politics, camping, health, and so on. There's even an area where people analyze each others' dreams. (Actual reply: "My interpretation of your dream is that you were wishing for a nice salad.")

Greenpeace, the Sierra Club, and various California eco-outfits are there, as are several dozen imported relevant Internet discussions. Even I, a Manhattanite who hasn't seen plant life in eight years, found something I'd been looking for: a decent definition of *postconsumer recycling*. A bonus: For some reason, environmentalists don't have the same appalling spelling and grammar of most BBS patrons. (Free up to 30 minutes daily; sysop, Robert Greenhood; voice 310/582-8228; modem 310/264-4785.)

### User-Group Systems

Since BBSs are user-driven, noncommercial enterprises, it stands to reason that several of the best are associated with user-driven, noncommercial outfits—Macintosh user groups. (To locate the one nearest you, call 800/538-9696.)

These BBSs harbor the usual FirstClass riches: E-mail, discussions, Mac answers, selected Internet discussions, and the inevitable boxcarful of shareware. But the geographical relevance of user-group BBSs gives them a special zest. For example, on the Los Angeles system, there's an icon called LA Eats, which suggests good L.A. restaurants. BMUG Boston (the East Coast wing of the famous Berkeley, California, user group) has press releases about Senator Kennedy. And the New York system, naturally, includes news of Broadway and the museums.

**Digital Cafeteria** The icons on digitalNation's industrial-tech welcome screen give you access to a vast, rich, underground world of information, files, and services. Except for the phone call, it's all free for the taking.

You're welcome to look around these services for free, even if you're not a member; but your time and access are limited until you pay up. (LAMG membership $36 per year; voice 310/278-5264; modem 310/559-6227. BMUG membership $40 per year; voice 510/849-2684, Planet BMUG [the main BMUG system] modem 510/849-2684; BMUG Boston modem 617/721-5840. NYMUG membership $45 per year; voice 212/473-1600; modem 212/473-1967.)

### The Upshot

These friendly, info-dense services are as dramatic a Mac development as, say, the invention of the mouse pad. Why don't we hear more about them? The pundits can finally quit bellyaching about how hard the Internet is to use—if you connect through a FirstClass BBS, using the Internet is no more challenging than double-clicking a folder.

In short, the quantity and quality of the stuff you'll find in this welcoming cyberland is astounding. After you've visited a few of these magical places, you'll either be stricken with Information Anxiety—or cured of it. **m**

Research assistance by Omar Wasow of NY Online (modem 718/596-5881) and Dallas Kachan of SoftArc (voice 416/299-4723).

Contributing editor DAVID POGUE is the author of *More Macs for Dummies* (IDG Books Worldwide, 1994), which contains, among other things, step-by-step instructions for getting onto the information superhighway without missing your exit.

### A FIRSTCLASS DICTIONARY

The world of FirstClass is so exciting, so mind-stretching, that it requires a whole new raft of terminology. Clip, save, enjoy.

**Conferences** FirstClassese for messages. This is the real bulletin-board part of a BBS, where you can participate in never-ending chains of replies to replies on every conceivable topic.

**FirstClass Client** Important! This is the free program you need to dial in to any FirstClass BBS. You'll find it in the Macworld area of America Online, among other places.

**Gateway** A link to another BBS. Unless you're really savvy, you probably won't even know when you're being patched through to a different system.

**Internet** A vast, technical, former military, computer network. It encompasses 20 million people and thousands of universities, companies, and government institutions.

**Résumé** A wonderful FirstClass feature that lets you read all about other BBS visitors, in their own words.

**Settings file** What really makes FirstClass BBSs great is that each is different. The welcome screens, the sounds, the icons, the folder arrangements are all customized by the operators of each BBS; all of this information is packaged into a document called the settings file. To enjoy the rich multimediac experience of a certain BBS, you must also obtain its settings file.

I've put the settings files for the BBSs described in this article, once again, in the Macworld forum of America Online. You can also get the settings file from the BBS itself (after dialing in with the FirstClass Client's generic settings).

**Sysop** The system operator—the poor slob who has forsaken food, family, and friends in order to maintain and administer a BBS.

WOW!
THE LEGENDARY
Kai's Power Tips and Tricks for Photoshop
NOW ON
CD-ROM
FREE!
FREE CD-ROM

*The legendary electronic book featuring secrets of the masters is finally yours!*
*Plus incredible digital imaging and a QuickShow utility! All on one CD-ROM!*
*Compatible for both Windows and Macintosh.*

# KAI'S POWER TIPS AND TRICKS CD-ROM – A $149 VALUE FREE*!

*Just $9.95 shipping and handling.

*On CD-ROM you get: "Kai's Tips and Tricks for Photoshop"—These practical shortcuts and insights by Kai Krause are ideal for beginning or professional digital imagers who want to get more productive right away using Adobe's Photoshop image editing software. Incredible Digital Imaging — Sample from hundreds of megabytes of out-of-this world textures, fractals, gradients, photo realistic 3-D landscapes, and other exclusive KPT imaging. QuickShow—The latest version of one of our favorite utilities turns your PICT images into a cool slide show.*

## ORDER TODAY! Fax Your Request To 310-392-6015

**Include your name, address, phone number, signature and valid Mastercard or Visa number with expiration date.**

## Or Call HSC Software Direct At 310-392-8441

HSC IS A REGISTERED TRADEMARK, AND KAI'S POWER TOOLS IS A TRADEMARK OF HSC SOFTWARE CORP. OFFER VALID FROM JUNE 1 TO AUG. 31, 1994, AND IS SUBJECT TO CHANGE WITHOUT NOTICE. PLEASE ALLOW THREE TO FOUR WEEKS FOR DELIVERY. FOR MAIL ORDERS: HSC SOFTWARE CORP. ATTN: CD-ROM, 1661 LINCOLN BLVD., SUITE 101 SANTA MONICA, CA 90404

MW894

**OR PURCHASE KAI'S POWER TOOLS 2.0 FROM YOUR FAVORITE SOURCE BETWEEN JUNE 1 AND AUG. 31, 1994, AND RECEIVE YOUR CD-ROM FREE OF SHIPPING AND HANDLING CHARGES! JUST SEND US THIS CARD, YOUR SOFTWARE REGISTRATION AND DATED PROOF OF PURCHASE.**

NEW IN THE PHENOMENALLY SUCCESSFUL SERIES OF KAI'S POWER TOOLS

# KPT Bryce™

## "We have a way with worlds..."

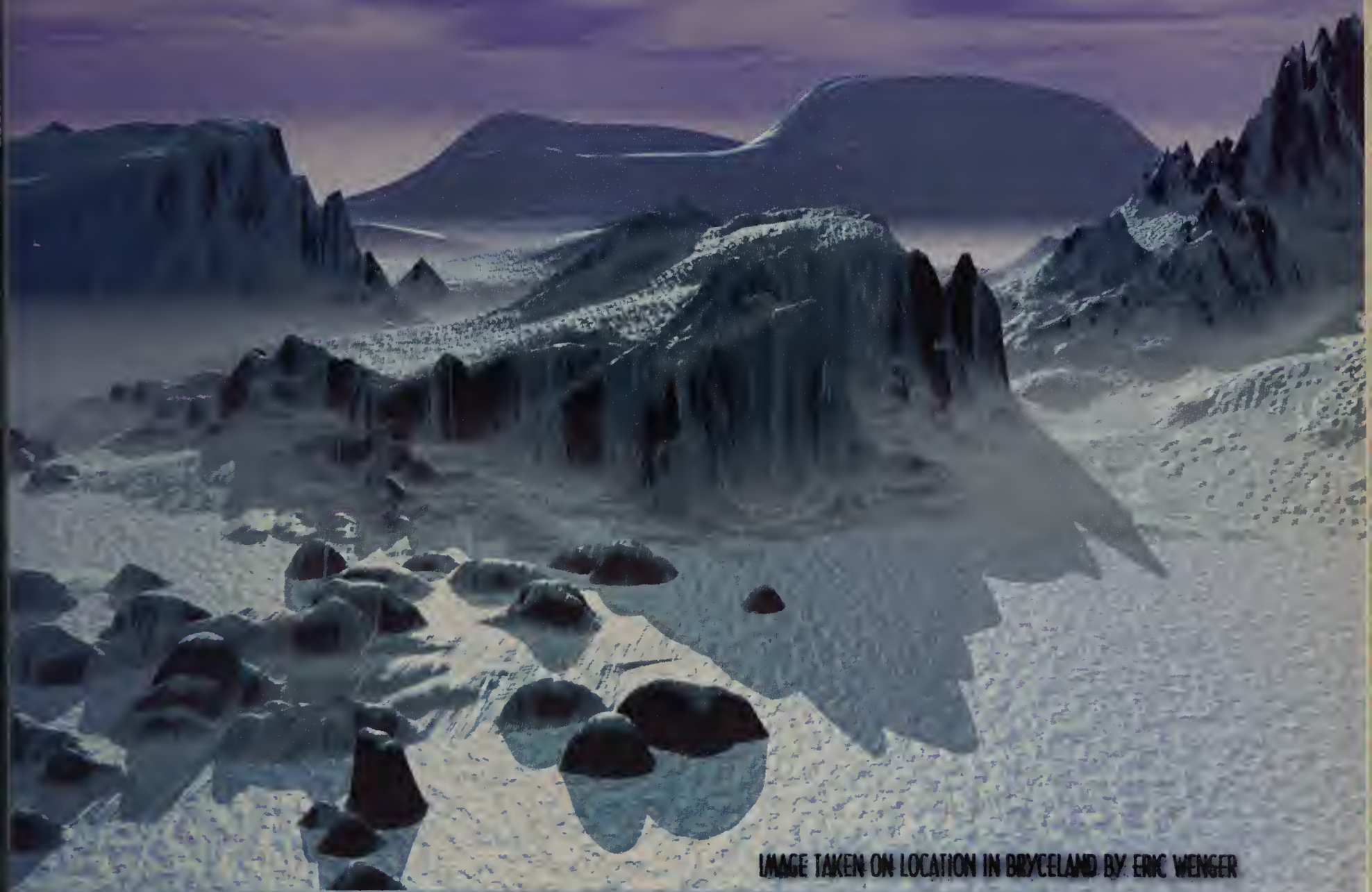


IMAGE TAKEN ON LOCATION IN BRYCELAND BY ERIC WENGER

HSC SOFTWARE PRESENTS A STANDALONE APPLICATION "KPT BRYCE"
STARRING A UNIQUE INTERFACE TO DESIGN & RENDER LANDSCAPES REAL & SURREAL
AVAILABLE AT COMPUTERWARE 800/326-0092, EGGHEAD 800/344-4323, COMPUTER CITY 800/843-2489 & OTHERS
HSC SOFTWARE 1661 LINCOLN BLVD #S 101 SANTA MONICA CA 90404 310/392-8441 VOICE 310/392-6015 FAX
TALK TO US 'kptsupport@aol.com,' KEYWORD 'KPT' on AMERICA ONLINE CALL YOUR FAVORITE RESELLER & ASK FOR KPT BRYCE ©1994 HSC SOFTWARE CORP.

© 1994 HSC Software Corp. HSC is a registered trademark, and KPT Bryce and Kai's Power Tools are trademarks of HSC Software Corp. All other product names are trademarks or registered trademarks of their respective owners.

Circle 5 on reader service card

# What have you got to choose?

**Comp**
*Choose the thermal wax mode for fast, inexpensive color comps, layouts and drafts.*

**Final**
*Choose the dye sublimation mode to output photo-realistic proofs right from your desktop.*

## Introducing The Only Photo-Realistic Printer That's Actually Two Printers In One.

it's the choice™

You want accurate photographic-quality prints to show your work at its best. And you want bright saturated color that won't cost you an arm and a leg for each page you print. Does that mean you need two color printers?

Not if you have the multi-technology Professional ColorPoint 2 PSF. The only 300 dpi full-bleed tabloid sized color printer with two printing technologies in one.

When color accuracy and realism count, you can choose the dye sublimation mode. You can output full-bleed tabloid pre-press color proofs, digital photographs or final color comps in sharp 24-bit continuous tone color. Without wasting time at a service bureau. But that's just the beginning.

This printer is also a low-cost thermal wax transfer printer. Just swap the media and ink sheet and you can output color layouts and quick comps in vivid color for about one-sixth the cost of dye sub prints. And the Professional ColorPoint 2 PSF comes standard with features like embedded Adobe PostScript Level 2® software, a fast Intel RISC processor, a 160 Mb internal hard disk, automatic page cutting and more.

Adobe PostScript

So whether you're in graphic design, architecture, science or medicine, the Professional ColorPoint 2 PSF has the power and flexibility you need. Because for high-quality dye sublimation and low-cost thermal transfer technologies in one printer, it's more than the right choice. It's the only choice.

Call now for more information 1-800-888-0817.

SII
Seiko Instruments

© 1994 Seiko Instruments USA Inc. Professional ColorPoint 2 PSF and It's The Choice are trademarks of Seiko Instruments USA Inc. PostScript Level 2 is a registered trademark of Adobe Systems Inc. All other trademarks are the property of their respective companies.

**Circle 149 on reader service card**

THE ICONOCLAST

BY STEVEN LEVY

# Passing on En Passant

*Attention, shoppers: virtual malls don't make it*

SHOPPING BY COMPUTER IS one of the best things to come along in years—from a retailer's point of view. The salespeople are software agents, who ask little in the way of wages. The real estate consists of a sales floor inside the consumer's personal computer, on which the retailer pays no rent, mortgage, or taxes. Shoplifting is unheard of. And the customer base is almost limitless, bounded by neither geography nor other real-world constraints like closing one's doors upon the onset of darkness. Is it any wonder that every marketer from Sears to Spiegel is getting in on the action, setting up storefronts in online virtual malls and publishing catalogs on CD-ROM?

What they seem to have forgotten is the customer's point of view. The initial ventures into this brave new world of digital consumerism seem to be driven more by what's good for the retailers than what the poor fish at the other end of the terminal might want. They apparently think we're just dying to spend our leisure hours—and our dollars—making virtual shopping trips in an environment controlled by their software and limited by the choices they offer us. At least that's the impression I got on a whirlwind shopping tour at several outposts of the cyberspace bazaar.

Case in point: En Passant. This CD-ROM–based product is a joint venture between Apple, Redgate Communications (a company experienced in compiling catalogs of Macintosh products), and EDS (a data processing firm). According to Ted Leonsis, the president of Redgate, "En Passant finally delivers on the promise of interactive, digital content delivery and personalized shopping in an environment that will bind buyers and sellers closer together." Last year the partners released a pilot version of En Passant to 30,000 CD-ROM owners; the test was sufficiently successful that the partners will continue with the shopping guide, which subscribers will receive quarterly.

## Annoying Technology

I found it an annoying piece of technology. En Passant has two components: a series of 21 digitized shopping catalogs from well-known junk-mailers to the yuppie trade, the usual suspects from Patagonia to The Pottery Barn, and a set of "departments," which consist of a few screenfuls of multimedia content seemingly digested from old airline magazines and trashed Learning Annex course guides. I sampled the departments first, laboring through several video-bytes of canned wisdom by the likes of Tom Peters. ("Update your résumé every 90 days," he said, jerkily waving his hands in a QuickTime clip.) Then I skipped through a feature about neckties where I learned my tie should say, "Me." All of this, filtered through the sluggish

through-rate of CD-ROM technology, was like an infomercial on quaaludes.

Then I tried the catalogs. In theory, multimedia catalogs have advantages—you can get multiple views of items, seeing them in different colors, for instance. Or you can hear snippets of recordings. Or you can get pop-up calculation devices that figure out sizes and such. It is essential to provide lots of these goodies, because computer catalogs suffer inherent drawbacks—they require a more focused attention, you can't flip pages and make serendipitous discoveries, and you can't read it on the toilet. En Passant falls short in these compensatory features. Though some items are supplied with sounds, there is little in the way of imaginative presentation. When a blouse is offered in six colors, why not let us change the colors we see?

The most useful component of En Passant is the Directory, which lets you go cross-retailer to choose items. For instance, if you're interested in necklaces, the program instantly compiles a custom catalog with items from The Horchow Collection, Tiffany's, The Nature Company, Pastilles, and the New York Museum of Modern Art. Still, Apple admits that the catalogs provided here are skimpier than the ones that are delivered to your mailbox. It's almost like getting a catalog with half the pages torn out.

In the Apple Catalog component, for example, I looked at the item for replacement LaserWriter cartridges and found that the En Passant disc only offered cartridges for the Select series—unlike the old *Apple Catalog*, which offered replacements for the entire range of LaserWriters. And the price was higher, too—in En Passant you get no discount for ordering three.

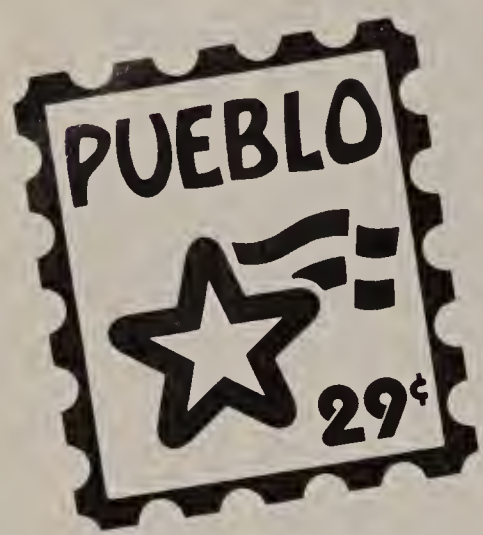
And if you do want to order something from the En Passant catalog, you can't simply press a button and have your modem call up the service and automatically buy the item—you have to call up or fax your order the old-fashioned way! (An Apple spokesperson says that future versions might allow you to order directly.)

## Mall of America Online

So much for CD-ROM. I thought I'd sample online shopping next, so I logged on to the shopping district of America Online. The first shock came when I dis-

*continues*

# Invest a stamp




# Save a bundle

For the price of a stamp, you can get the latest edition of the federal government's free **Consumer Information Catalog** listing more than 200 free or low-cost government publications on topics such as federal benefits, jobs, health, housing, education, cars, and much more. Our booklets will help you save money, make money, and spend it a little more wisely.

So stamp out ignorance, and write today for the latest free **Catalog**. Send your name and address to:

**Consumer Information Center**
**Department SB**
**Pueblo, Colorado 81009**

**A public service of this publication and the Consumer Information Center of the U.S. General Services Administration.**


covered that AOL charges the customer for shopping time. (Its main competitor does not: visit CompuServe's virtual mall and you're off the clock.) The next shock came when I actually tried to find something I wanted to buy.

I headed right for the AOL Online Bookstore, run by a company called Read USA. A good sign: a note informed me that every book was sold at a discount price. The most recent Philip Roth book had just come out in softcover, so I tried to locate it with the search function, looking for the keyword *Roth*. The sole response to my query was *Harriet Roth's Fat Counter*. This seemed odd only until I looked deeper into the Online Bookstore and discovered that aside from a relative profusion of computer books, its selection couldn't compare to your average garage sale. Literacy was at a premium, too. In the biography section there were all of 16 books, with 3 devoted to Princess Diana and 3 to Ross Perot. Even the categories betrayed a suspect sensibility—there were separate sections for fiction and literature.

### eShop of Horrors

I would like to report that we can expect much better shopping alternatives when the new generation of personal digital assistants come online, but judging from a demonstration I had of eShop, the electronic shopping component geared to the General Magic operating system, I think there will be a shakeout period. Simply reading the eShop press release, which promises "technology that allows merchants to create exciting, personalized shopping experiences for consumers," made my heart sink. Don't they understand? When we sit in front of our computer screens or stare at our blurry little PDAs, we don't *want* shopping "experiences." If we did, we'd leave the house and go to a store! The whole idea of shopping by computer is to *avoid* shopping—those who prefer to do it digitally just want to push a few buttons and get hold of the specific merchandise we need. We don't want to browse—and if we did, we certainly wouldn't want to do it on the hard-to-decipher, black-and-white, 4-inch screen of a General Magic device.

Yet, to my astonishment, when I got a demo of eShop, I was shown a cyberspacey re-creation of the "experience" of going into the sporting goods section of a department store and comparison shopping for a tennis racket. In the real eShop, you'd see a picture of one tennis racket, with brand name and features, and then look at another one and presumably make your decision.

I could not contain myself. "Excuse me," I asked, "isn't a tennis racket the absolute last thing you'd want to buy electronically? Don't people buying tennis rackets usually want to *hold* them before they buy them?"

The eShop representative was nonplussed—he had never heard this question before. But now that I mentioned it, maybe tennis rackets were not the ideal choice for the demo. He asked me to assign no special meaning to this choice, since, after all, it was only the demo. Also, digital merchants can use the flexibility of the eShop system to set up any number of different kinds of environments.

Still, I wondered afterward, eShop could have chosen anything for their demo—why did they choose tennis rackets? After all, the real usefulness of having a PDA with a shopping component is hooking up to vast databases of items, utilizing fast searches to find the specific item you need, and ordering it in a flash. Didn't they *get it?*

### At Last I've Found You

Amazingly, one company does get it. Compact Disc Connection (408/985-8982 for online access) is a listing of over 80,000 compact audio discs that can be easily searched by artist, title, category, or other fields. When you find what you want, you order it online, and CDC tries to get it for you (the service claims a hit rate of over 90 percent). The commands on the system are spartan but effective. When you find the disc you want, you can, with a keystroke, get a list of the songs it contains. Many of the CDs are subjectively rated by a star system, and some have short reviews. Often, CDC sells its wares at a discount.

When I accessed CDC through its Internet address (cdconnection.com), I got hooked instantly. Though it is not flashy—no videos of Tom Peters here—and though it makes no claims to be an "experience," Compact Disc Connection provides utility that En Passant has yet to attain. When I get my wireless PDA, Compact Disc Connection will be on the speed-dialer. I want the same sort of service for books, too, as well as other sorts of items. For instance, instead of the lush graphics of an L. L. Bean catalog on CD-ROM, I'd prefer to call up a database that lists everything Bean has ever sold—just in case I want to order a sleeping bag in a hurry. When it comes to shopping electronically, high-bandwidth selection and a quick in-and-out is the future. Spare me the frills, please—I just want to shop till I stop. **m**

---

STEVEN LEVY's latest book is *Insanely Great: The Life and Times of Macintosh, the Computer That Changed Everything* (Viking, 1994).

# ADD YOUR *Handwriting* TO THE FONT MENU!

Arial
Courier
▶Your Font
Helvetica
Times

for MAC and WINDOWS

**Signature Software**

# PenFont™

Personal Printed Handwriting Font

Price breakthrough!! A custom font of your own handwriting and signature for only $49.95!

**Actual PenFont Handwriting Font Samples!**

Please review prior to Tuesday's meeting.

JudyFont
Judy L. - Toronto, ONT

Congratulations on your promotion!

KenFont
Ken J. - San Diego, CA

P.S. Thanks for your order!!

TomFont
Tom C. - Denver. CO

That was some company picnic!

BobFont
Bob S. - Tulsa, OK

## The impact of handwriting.

Experienced communicators know that people open hand-addressed envelopes, read hand-written letters and respond to hand-written requests! Handwriting has a personal flair which grabs your attention! Unfortunately with the advent of the personal computer we've been using our handwriting less and less. Now with **PenFont** you can add your handwriting to the Font Menu!

## PenFont - the TrueType version of your OWN handwriting!

Signature Software will convert your best printed handwriting into a custom font that you can use with any of your Macintosh or Windows applications! Imagine running your spell checker on your handwriting! Or how about using your word processor's cut and paste features to polish up handwritten letters. Sign your FAX-modem messages. With PenFont you can combine the convenience and power of your computer with the personal impact of your own handwriting. All for the unheard of custom font price of only $49.95!

## Create your font today!

To obtain your own PenFont complete the form on the reverse side of this page and send it into Signature Software. Our font designers will convert your handwriting into a unique TrueType font. After thorough testing, this font is shipped to you along with easy-to-use installation software. Your PenFont includes your signature and two symbol characters (like your initials or a personal logo) along with a complete set of 98 keyboard characters including the upper and lower case letters, numbers and punctuation.

System Requirements:
Mac - System 6.05 or higher, including System 7
PC - Windows 3.1 or above

- Include US $7.50 Shipping and Handling.
- International versions available.

For more information call
1-800-925-8840 (in USA) or 503-386-3221
or FAX 503-386-3229

## THERE'S NO OTHER FONT LIKE YOUR OWN PENFONT, AND HERE'S HOW TO ORDER!

## ORDER YOUR FONT!

*Send your completed form to:*

**Signature Software, Inc.**
**489 N. 8th St. Suite 201**
**Hood River, OR 97031**

Because each order is custom please allow 2 to 4 weeks. Add $20 for 5 day processing. (48 hour processing is available).

*$7.50 special handling includes personalized disk, personal test document and copy of original form.

Price Reduction!
~~$99.95~~
**$49.95**
limited time

**+ $7.50** shipping and special handling*
(Note: all prices $US)

Signature Software
**PenFont™**
Personal Printed Handwriting Font

*Available for Mac AND Windows!*

Dealer Inquiries Welcome

NAME

COMPANY

ADDRESS

CITY STATE ZIP COUNTRY

VISA MasterCard AMERICAN EXPRESS DISCOVER CARD NUMBER

*(circle one or enclose check)*

CARD EXPIRATION PHONE

○ 3.5"
○ 5.25"

PC Mac

*(circle format desired)*

CARDHOLDER'S SIGNATURE

☐ *YES! Rush me my PenFont in 5 working days for $20 extra*

☐ *YES! Include PenPals with my PenFont Order for for the special bundle price of $69.95*

"FOR THOSE TIMES WHEN PALATINO OR ARIAL JUST WON'T DO, FONTS FROM SIGNATURE SOFTWARE COME TO THE RESCUE." -Computer Shopper

*I recommend these fonts for each and every person who has heard (or read) the words 'typing is impersonal'.* - MacWorld

Also Available: **PenPals** Printed Handwriting Font Pack

Five Fantastic Handwriting Fonts!

Americo
Anna
Joann
Rhyne
Robert

Only $29.95

**Special Printed Handwriting Font Bundle**
Receive BOTH PenFont and PenPals for the unbelievably low price of **$69.95**

For More Product Info Circle Reader Service Number 300
MW9408

**Signature Software**

# PenFont™

*Personal Contextual Handwriting Font*

for Mac and Windows

Name: _____ Phone #: _____

## SAMPLE FORM INSTRUCTIONS

1. Write your signature and write or paste in SIMPLE figures for the two symbol characters – smile face, logo, initials, etc. Make sure symbols fit in the box.
2. For best results, use block printing for all characters. **Avoid using long tails on your letters since they may tend to cross over neighboring letters.** Remember, what you write here will be the final font.
3. Print the characters shown within each box using the broken lines as a base. Don't forget the punctuation!
4. Print naturally and consistently. Practice first on a separate sheet of paper.
5. Use the supplied fibertip pen. **Do not use ballpoint pens or pencils!**
6. Use the grid lines in the boxes as an aid to maintain consistent height and slant. Be sure capital letters are proportional to lower case letters.
7. Name your font below and complete the name, address, and payment section on the front of this form. **Indicate PC or MAC!**

**NOTE:** Strike out mistakes and write corrections nearby. Signature Software can even make changes after you receive your font!

## NAME YOUR FONT!

The name must be seven alphabetic characters or less

symbol 1 symbol 2

Signature (your name)

a b c

d e f g h i j

k l m n o p q

r s t u v w x

y z

Please PRINT the following sentence (using the same style you used filling out this form).

The quick brown fox jumps over the lazy dog.

( ) { } [ ] A . B , C ! D ?

E ; F : G " H ' I ` J ~ K _

L # M % N $ O & P | Q @ R ^

S + T – U * V = W / X \ ' Y '

" Z " < > 1 2 3 4 5 6 7 8 9 0

Copyright ©1994 Signature Software, Inc

BY DEBORAH BRANSCUM

# Repair Strategies

*How to cope with a sad Mac*

GOT A BROKEN MAC? MAKE sure it is really busted before taking it in for repair. Between 40 and 60 percent of the Macintoshes that are brought to dealers show no hardware problems, according to repair specialist Larry Pina. "If you're faced with a problem, the chances are fifty-fifty that you don't need to pay any money; you just need to think the problem through."

"Don't assume it's hardware," says Pina. It might be a problem with system software, extension or INIT conflicts, or a change in default settings. The automatic install program for System updates, for example, turns off 32-bit addressing and may change the default printer.

Before you panic, restart the computer with a good System backup on a floppy. "If you can boot with that floppy and connect to your hard drive, it's not the computer," says Pina. (For more software troubleshooting tips, see *Conspicuous Consumer*, July 1993, and "Troubleshooting Tips and Tools," *Macworld*, April 1994.)

If it is a hardware problem and the Mac is still under warranty, any authorized dealer can handle a repair. But owners of older machines also have options. You can still go to an Apple dealer, where a service technician will diagnose the problem, locate the faulty part, and then replace it with an Apple-refurbished part covered by a three-month warranty. You can use an independent service provider, who may also swap out a faulty part and replace it or repair the faulty part. Or you may be able to make the repair yourself.

Larger businesses have similar choices: deal with repairs on a case-by-case basis; develop an in-house repair center; or use a corporate repair service provided by Apple dealers or independent service companies such as Vanstar Corporation (formerly ComputerLand) and GE Computer Services. Vanstar (800/722-2736) and GE (404/ 246-6200) target companies with hundreds of computers, offering a variety of repair and service options, including response times of two to eight hours and next-day service.

### One Company's Choice

Although SRI International of Menlo Park, California, has hundreds of Macintoshes, materials coordinator Anita Ledtje doesn't believe it's cost-effective to buy service contracts. "Most Apple products are up and running until the time we unplug them," she says. "The PowerBooks have a hard life, but we don't have that many problems. If we paid for service contracts, it would put us into a hole."

Ledtje's job requires her to eliminate headaches before SRI buys equipment and after, she says. "That's why it's very important to have good service and support." But keeping SRI's Macs in good repair is not easy. Earlier this year, for example, Ledtje sent a PowerBook 170 to a local ComputerLand for a floppy drive repair. Because SRI material is often sensitive, the hard drive was completely erased before it was sent for repair and had to be started up from a floppy-based System. Though Ledtje had explained the situation, a technician called to report a problem with the hard drive. Ledtje tried to explain the situation once more; even so, the PowerBook was returned with the floppy drive still broken.

Next, Ledtje tried Hewlett-Packard, a company she loves for its customer service. When an SRI employee had several problems with his Duo 230, Ledtje bundled up the Duo and MiniDock and sent them to the HP facility in Austin, Texas. "The MiniDock had been fixed, but nothing else worked," says Ledtje, who waited two weeks for the Duo's repairs. "The latch didn't latch; the return didn't return. The Duo was visibly broken." Ledtje negotiated a much lower repair fee from HP, given the result, and in the process learned that HP doesn't repair Macs itself but contracts the work out.

Then an SRI researcher dropped his PowerBook 170, and Ledtje got nervous. She was running out of repair options. The researcher suggested Macadam, a San Francisco Apple dealer he heard about through a local user group. Macadam gave Ledtje the needed service, and owner Tom Santos made the repair process fast and easy.

### Dealers versus Independents

Jeff Bierly, co-owner of Atlantic Computer Systems of Toms River, New Jersey, warns against using independent service providers that do component-level repairs, because subsequent repairs may be more expensive. That's because Apple charges two different prices for parts: one for refurbished parts, based on a trade-in program where dealers send the defective part to Apple; and another, much higher price for brand-new parts. If you use an independent for one repair but must go to a dealer for another, you may pay a price penalty.

Still, the gamble can be worthwhile. The price difference between independents and authorized dealers can be dramatic. ComputerWare in San Francisco charges just over $800 to replace a faulty Quadra 700 logic board, for example, while 800-We-Fix-Macs (408/988-2334, 800/933-4962) charges $429 plus shipping. The five-year-old Santa Clara, California–based company charges flat-rate

*continues*

Coming In September

10

Macworld

INTO THE NEXT DECADE

Don't miss the eighth annual World Class Awards. Macworld readers select the top hardware and software products of 1994.

Networking

Personal Laser Printers

MW Shopper Close 6/21/94

Display Close 6/28/94

fees for repairing motherboards, PowerBooks, floppy drives, monitors, and other peripherals. Other established independents include MicroDoc (503/344-5335) and Soft Solutions (503/461-1136), both of Eugene, Oregon.

If you prefer to do it yourself, two books by Larry Pina are invaluable. *The Dead Mac Scrolls* (1992, Peachpit Press) describes Mac symptoms, offers probable diagnoses, and suggests solutions. It's particularly useful for folks who don't plan to do their own repairs but want to avoid repair rip-offs. *Mac Classic & SE Repair and Upgrade Secrets* (1993, Peachpit Press) shows the technically talented how to repair common problems with these compact Macs. (For more info, contact Peachpit at 510/548-4393 or 800/ 283-9444.)

### A Service Checklist

If your company is too small to field in-house repairs, or you simply find it more cost-effective to go outside, use this checklist to compare service offerings.

- How long has the company or service center been in existence? Although there are exceptions, older businesses may be more stable than start-ups.
- What are the qualifications of the repair technicians? They should be Apple-certified. Certification doesn't guarantee that technicians are highly skilled in repair, but it does mean that they should be able to diagnose any faulty hardware and swap it out if not repair it on the spot. Apple trains techs to locate hardware problems and then replace malfunctioning parts with refurbished ones.
- Is there a fee if no problem is diagnosed? Many companies charge to diagnose a problem, whether or not they find one. In some cases the fee may be applied to the repair bill if a problem is found.
- How long is the warranty? Apple offers a 90-day parts-and-labor warranty on repairs. Independents often have warranties of six months or more.
- What is the turnaround time? It will probably vary depending on work load and staff levels. Some companies offer same-day, while-you-wait service or premium 4-hour on-site response programs. Claims of 24-hour and 72-hour turnaround times are not uncommon; find out what that means. For example, 24 hours may mean that if a company receives your computer on Monday, the Mac will be repaired and shipped out on Tuesday via second-day air, so you get your machine back on Thursday.
- Compare prices. Charges vary by dealer, service, and region. If you know the problem is, say, a dead monitor or broken floppy drive), compare ballpark estimates over the phone. Dealers usually charge a one-hour minimum plus parts; independents often charge a flat fee. But price is not the only consideration. As Anita Ledtje notes, "I'm buying for a business. I'll pay more knowing a company will be here when we have problems."
- If you are considering an independent, ask about inventory and the source of parts. Independents sometimes buy gray-market parts because Apple won't sell to independents directly. As a result, some parts may be tough to locate, which might slow down your repair.
- Does the company offer any special services or programs? 800-We-Fix-Macs offers toll-free technical support. Loaner programs are rare, but customers with clout may be able to negotiate for a loaner computer during the repair period.
- Ask for references and call them. See how the company's claims match the experience of its customers. And check with user groups or online service to get a feel for the company's reputation.

One last thing—when you take an Apple product in for repair to a dealer, ask if the product is covered by an Apple repair-extension program. Apple notifies dealers, though not usually owners, when a particular product will be repaired free of charge beyond its warranty period because of manufacturing problems. Until August 15, for example, Apple is supplying free ROM upgrades for Personal LaserWriter NTRs with certain symptoms. Ask your dealer for details. **m**

### SERVICE HERO

Reader Jean-Yvan Fradet of Montreal writes in praise of Data Memory System. After buying four 2MB SIMMs, Fradet found one was defective, so he called Data Memory's tech support for help. "The guy there told me the company would ship me four new SIMMs," writes Fradet. "He told me to try them to see if they worked *before* returning the four previously shipped to me." Data Memory apologized for the problem and refunded the postage fees for returning the first SIMM order; our reader was dazzled by the prompt replacement of a defective product.

Send nominees for sainthood to *Service Heroes, Macworld*, 501 Second St., San Francisco, CA 94107, or via Internet (Branscum@AOL.com). Conversely, drop *Conspicuous Consumer* a line if a company is ignoring you.

# Editors' Choice

THE BEST PRODUCTS FEATURED IN MACWORLD

**Edited by Susan Grant-Marsh**

*Macworld Editors' Choice* is a complete listing of the hardware and software products selected as the best of their type in *Macworld*'s comparative articles. A ✣ next to a product indicates that we chose more than one product in that category. A ◀ next to a product listing indicates that a native Power Mac version is available.

## Hardware

### MONITORS

BLACK-AND-WHITE MONITORS, May 93

**Portrait monitor:** 15-Inch Gray Scale Portrait Display; Mirror Technologies, 612/633-4450; $399, with video-display board $549.

**Two-page monitor:** ✣ L-View MultiMode; Sigma Designs, 510/770-0100; $1099, with video-display board $1398. ✣ MD 202 Two Page Display; Mobius Technologies, 510/654-0556; $699, with video-display board $798.

COLOR MONITORS, Oct 93

**16- and 17-inch:** ✣ ErgoView 17; Sigma Designs, 510/770-0100; $1349. ✣ MultiSync 5FG; NEC Technologies, 708/860-9500; $1355 (NEC's estimated dealer price).

SMALL COLOR MONITORS, Jan 94

**14-inch display:** ✣ Sony CPD 1430; Sony Corp. of America, 800/222-7669; $779.95. ✣ Nanao FlexScan F340i•W; Nanao USA, 800/800-5202; $799.

**15-inch display:** NEC MultiSync 4FGe; NEC Technologies, 708/860-9500; estimated street price $755.

### NETWORK HARDWARE

HIGH-SPEED FAX MODEMS, Oct 93

Teleport Gold and Silver with Global Fax; Global Village Communication, 415/390-8200; Gold $499, Silver $429.

### POWERBOOK TOOLS

DUO DOCKING CONNECTORS, Feb 93

PowerLink DeskNet; E-Machines, 503/646-6699; $699.

EXTERNAL HARD DRIVES, Feb 93

✣ Companion 120; APS Technologies, 800/874-1428; $599. ✣ PocketDrive 120M8; La Cie, 503/520-9000; $699.

INTERNAL FAX MODEMS, Feb 93

✣ PowerModem series; PSI, 408/559-8544; $195 to $495. ✣ PowerPort series; Global Village Communication, 415/390-8200; $229 to $499.

### PRINTERS

COLOR PRINTERS, Aug 94

**Low-end ink-jet:** DeskWriter 560C; Hewlett-Packard, 800/752-0900; $719.

**Solid ink-jet:** Phaser 300i; Tektronix, 503/682-7377; $9995.

**Thermal-wax transfer and color laser:** Phaser 220i; Tektronix, 503/682-7377, $5995.

DYE-SUBLIMATION PRINTERS, Jul 94

**Prepress proofing—tabloid size/fastest:** Phaser 480; Tektronix, 503/682-7377; $14,995.

**Prepress proofing—tabloid size/most complete:** Rainbow; 3M, 612/733-1110; estimated street price of $20,000.

**Prepress proofing—letter size:** ProofPositive Full Page; SuperMac Technology, 408/541-6100; $7999.

**General publishing and business:** Phaser IISDX; Tektronix, 503/682-7377; $9995.

PERSONAL PRINTERS, Sep 93

**Ink-jet:** StyleWriter II; Apple Computer, 408/996-1010; $359.

**PostScript laser:** TI microLaser Series; Texas Instruments, 512/250-6679; $1199 to $1599.

**QuickDraw laser:** LaserWriter Select 300; Apple Computer, 408/996-1010; $839.

WORKGROUP PRINTERS, Feb 94

**High-speed:** Hewlett-Packard 4Si MX; Hewlett-Packard, 800/752-0900; $5499.

**Best buy:** ✣ Apple LaserWriter Pro 630; Apple Computer, 408/996-1010; $2529. ✣ Hewlett-Packard LaserJet 4M; Hewlett-Packard, 800/752-0900; $2329.

### SCANNERS

LOW-COST COLOR SCANNERS, Nov 93

**$1300 to $1600:** ✣ La Cie Silverscanner II; La Cie, 503/520-9000; $1599. ✣ Hewlett-Packard ScanJet IIc; Hewlett-Packard, 800/752-0900; $1599.

**Under $1300:** Mirror 800 Plus Color Scanner; Mirror Technologies, 612/633-4550; $1299.

OCR, Nov 93

OmniPage Professional; Caere Corp., 408/395-7000; $995.

### SYSTEMS/STORAGE

DOUBLE-SPEED CD-ROM DRIVES, Jul 93

**Sheer speed:** Pioneer DRM-604X; Pioneer, 408/988-1702; $1795.

**Overall value:** AppleCD 300; Apple Computer, 408/996-1010; $599.

**Budget choice:** NEC MultiSpin 38; NEC Technologies, 708/860-9500; $465.

HIGH-SPEED HARD DRIVES, Aug 93

**2.7GB drives:** ✣ Nova XL 2700; Microtech International, 203/468-6223; $2999. ✣ Vista 3.5G8; Relax Technology, 510/471-6112; $3499.

**SCSI-2 adapter:** QuickSCSI; PLI, 800/288-8754; $499.

MACINTOSH UPGRADES, Jun 93

**SE accelerator (25MHz):** Quik30; Novy Systems, 904/427-2358; $449 (without FPU).

**SE/30 accelerator (50MHz or 33MHz):** Universal PowerCache; DayStar Digital, 404/967-2077; 50MHz $999 (with FPU), 33MHz $449 (without FPU).

**LC and LC II upgrades:** Macintosh LC III Logic 8oard Upgrade; Apple Computer, 408/996-1010; $599.

**Mac II accelerators:** ✣ Radius Rocket 25i, Radius Rocket 33; Radius, 408/434-1010; 25i $1199, 33 $2499. ✣ Universal PowerCache series; DayStar Digital, 404/967-2077; $449 to $999.

**IIfx SCSI accelerator:** QuickSCSI; PLI, 800/288-8754; $499.

**Quadra static-RAM cache card:** FastCache Quadra; DayStar Digital, 404/967-2077; $299 for Quadra 700 and 900, $449 for Quadra 800 and 950.

OPTICAL DRIVES, Dec 93

**3½-inch:** ✣ Epson OMD 5010; ClubMac, 800/258-2622; $959.

✣ 128 MO; APS Technologies, 800/874-1428; $899.

**5¼-inch:** ✣ Sharp JY-750; ClubMac, 800/258-2622; $1829.

✣ Infinity MaxOptical 11m; Peripheral Land Inc., 800/288-8754; $4113.

### VIDEO/DISPLAY

24-BIT VIDEO CARDS, Apr 94

**Inexpensive acceleration:** PrecisionColorPro 24XP; Radius, 408/434-1010; $599.

**Full-featured acceleration:** Thunder II GX•1360; SuperMac Technology, 408/541-6100; $4499.

HIGH-END VIDEO EDITING, June 94

**Presentation Video:** ✣ MoviePak2 Pro Suite; RasterOps, 801/785-5750; $4199. ✣ VideoVision Studio; Radius, 408/434-1010; $4499.

**Corporate Video (Offline):** Media Composer 400s; Avid Technology, 508/640-6789; $14,995.

*continues*

# MACWORLD Editors' Choice

**Corporate Video (Online):** VideoCube; ImMix, 916/272-9800; $40,500.

PHOTOSHOP ACCELERATORS, Apr 94
PhotoBooster; Radius, 408/434-1010; $999.

## Software

### ACCOUNTING/FINANCE

GROWING A SMALL BUSINESS, Nov 93
**Small-business system:** M.Y.O.B.; Teleware, 201/586-2200; $199.
**Home office/personal finance:** MacMoney; Survivor Software, 310/410-9527; $119.95.

### BUSINESS TOOLS

STATISTICS, Oct 93
**Exploratory data analysis:** DataDesk 4.1; Data Description, 607/257-1000; $595.
**Comprehensive package:** SYSTAT 5.2.1; SYSTAT, 708/864-5670; $895.

### CD-ROM

TOP 10 CD-ROMS, Mar 94
**Overall:** Seven Days in August; Time Warner Interactive Group, 818/955-9999; $79.99.

### COMMUNICATIONS/NETWORKS

COMMUNICATIONS SOFTWARE, Aug 94
**Basic connectivity:** ZTerm; David P. Alverson (no phone number available); $30.
**Terminal emulation:** Crosstalk for Macintosh; Digital Communications Associates, 404/442-4000; $195.
**Internet exploration:** VersaTerm; Synergy Software, 215/779-0522; $125.

HIGH-SPEED FAX MODEM SOFTWARE, Oct 93
Faxstf; Telefocus, 816/886-9800; $79.

NETWARE CONNECTIVITY, Sep 93
NetWare for Macintosh; Novell, 801/429-7000; $495 for 5-user license to $2295 for 200-user license.

PROTOCOL ANALYZERS, Jul 94
EtherPeek, AG Group, 510/937-7900; $795.

SOFTWARE ROUTER, Jul 93
Apple Internet Router 3.0; Apple Computer, 408/996-1010; Basic Connectivity Package $499.

TERMINAL EMULATOR, Oct 93
VersaTerm; Synergy Software, 215/779-0522; $149.

### GRAPHICS

3-D DESIGN, Aug 93
**Price for performance:** ✣ Ray Dream Designer 2.0.4; Ray Dream, 415/960-0765; $299. ✣ Alias Sketch 1.5; Alias Research, 416/362-9181; $995.
**All-in-one solution:** ✣ Infini-D 2.5; Specular International, 413/253-3100; $695. ✣ StrataVision 3D 2.6.1; Strata, 801/628-5218; $995.

CLIP ART'S GREATEST HITS, Jan 94
**Overall collection:** ✣ ClickArt Studio Series; T/Maker Company, 415/962-0195; $99.95 per volume. ✣ Electronic Clipper subscription service; Dynamic Graphics, 800/255-8800; $67.50 per month. ✣ Metro ImageBase Electronic Clip Art; Metro ImageBase, 800/525-1552; $74.95 per volume, CD-ROM $149.95. ✣ Images with Impact series; 3G Graphics, 800/456-0234; $99.95 to $129.95 per volume, CD-ROM $499. ✣ Typographers' Ornaments; Underground Grammarian, 609/589-6477; $25 per volume; ten TIFF albums $200; EPS volumes $50 each.

DRAW PROGRAMS (LOW-COST), Sep 93
**Budget draw:** Expert Draw; Expert Software, 305/567-9990; $49.95.
**Budget draw/paint:** UltraPaint; Deneba Software, 305/596-5644; $79.
**Beginners' program:** Aldus SuperPaint; Aldus Corp., 619/558-6000; $149.95.
**Overall:** Canvas; Deneba Software, 305/596-5644; $399.

FONT BUYERS' GUIDE, Mar 94
**Text-face collection:** Type On Call CD-ROM; Adobe Systems, 415/961-4400, 800/682-3623; $99 (includes the ability to unlock two families from preselected packages) plus $25 to unlock individual faces or $69 to $179 for unlocking families.
**Display/decorative-face collection:** Fontek; Letraset, 201/845-6100; $39.95 per face.
**Bargain collection:** Monotype ValuePack; Monotype, 312/855-1440; $89 for 57 fonts.

IMAGE DATABASES, Oct 93
✣ Aldus Fetch 1.0; Aldus Corp., 206/628-5739; $295.
✣ Multi-Ad Search 2.0; Multi-Ad Services, 309/692-1530; $249.

PAINT AND IMAGE-EDITING, Sep 93
**Budget buy:** Expert Color Paint; Expert Software, 305/567-9990; $49.95.
**Overall program:** Fractal Design Painter; Fractal Design Corp., 408/688-8800; $399.
**Image-editing program:** Adobe Photoshop 2.5.1; Adobe Systems, 415/961-4400; $895.

### INTEGRATED SOFTWARE

INTEGRATED SOFTWARE, Feb 94
ClarisWorks; Claris Corporation, 408/727-8227; $299.

Vendors: Please write to Macworld Editors' Choice, 501 Second St., San Francisco, CA 94107, or send a fax to 415/442-0766 to inform us of changes in your phone number or your product's list price.

### ONLINE SERVICES

ONLINE SERVICES, Aug 94
**E-mail:** America Online; America Online, 703/893-6288; basic monthly fee $9.95.
**Reference:** CompuServe; CompuServe Information Service, 614/457-0802; basic monthly fee $8.95.

### ORGANIZATION/PRODUCTIVITY

CALENDARS, Jul 93
**Alarm system:** ✣ First Things First; Visionary Software, 503/246-6200; $79.95.
✣ Smart Alarms Plus; JAM Software, 203/630-0055; $75.
**All-around scheduler:** Now Up-to-Date; Now Software, 503/274-2800; $99.
**Meeting scheduler:** Meeting Maker; On Technology, 617/374-1400; five-pack $495.

GRAPHING SOFTWARE, Aug 94
DeltaGraph Pro 3 3.0.4; DeltaPoint, 408/648-4000; $195.

SALES-AUTOMATION SOFTWARE, Oct 93
✣ Contact Ease; WestWare, 619/274-5053; one user $395, five users $1495. ✣ CBS; Colleague Business Software, 512/345-9964; $495.

TEXT-RETRIEVAL SOFTWARE, Dec 93
**Small system:** On Location; On Technology, 617/374-1400; $129.
**Multiuser system:** Personal Librarian; Personal Library Software, 301/990-1155; $995.

### PRESENTATION TOOLS

PRESENTATION SOFTWARE, Jul 94
Persuasion 3.0; Aldus Corp., 206/622-5500; $495.

### UTILITIES

BRAVE NEW DOCUMENTS, Jan 94
**Application-independent document distribution:** Common Ground; No Hands Software, 800/598-3821; $189.95.
**Book-length documents:** FrameReader; Frame Technology, 800/843-7263; $84.95.

PRINTING, Sep 93
**PC-printer cable packages:** PowerPrint; GDT Softworks, 604/291-9121; $149.

VIRUS KILLERS, Jul 94
**Commercial software:** Virex; Datawatch, 919/549-0711; $99.95.
**Free software:** Disinfectant; free from online services.

### VIRTUAL MEMORY SOFTWARE

VIRTUAL MEMORY, June 94
**Virtual memory Software:** Virtual 3.0; Connectix Corp., 415/571-5100; $99.
**Memory Boosting Software:** RAM Doubler 1.0.1; Connectix Corp., 415/571-5100; $99. m

# The Pinnacle Recordable CD Storage System just got better...

## $1500 better!

~~$3995~~ $2495 list price

MacUser RECOMMENDS

"The best CD-R system for low-volume archiving."
*-Erik Holsinger, MacUser June 1994*

Publish impact AWARDS'93

*Publish Magazine 1993 Impact Award*

IMAGING MAGAZINE EDITORS' CHOICE

*Imaging Magazine 1994 Editors' Choice*

PCComputing MVP 93 FINALIST

*PC Computing 1993 Multimedia Product of the Year*

The Pinnacle recordable CD just got better. Now only $2495, the Pinnacle RCD-202™ is the most *affordable* CD-R maker in the industry. It has also won more awards than any other CD-R system out there.

The RCD-202 is ideally suited for data archival/backup, creating and testing multimedia titles, or even mixing your own music/audio CDs. Each recordable CD holds up to 680 Megabytes of data for only **$39**, or just **6 cents** per megabyte.

The RCD-202 is a multisession recorder and player that supports ISO 9660, HFS, and CD Red book audio recording standards.

The RCD-202 system comes complete with Pinnacle's easy-to-use software program. Simply set the recording format, drag-and-drop selected files to their destination, then hit create. And in minutes you've just mastered your own compact disc.

To order or for a reseller call: **800-553-7070**

PINNACLE MICRO
THE OPTICAL STORAGE COMPANY®

International Tel. 714-727-3300 U.S. Fax 714-727-1913

All Trademarks and Registered Trademarks of Their Respective Owners.

**Circle 178 on reader service card**

# You may use this to secure your bicycle

# *But...*

# You **must** have this for secure data communications

**LOGICODE presents**

***QUICKTEL***

**28,800 DATA™ SAFE**

**FAX/MODEM**

**The first modem with a built in safe**

With LOGICODE's new *QUICKTEL* DATASAFE™ 28,800 fax/modem you not only get the fastest available data transmission speeds, but you gain the added security of having total control over the use of your modem.

**"Password Protection"** hardware enabled to fend off data piracy

**"Call Back Security"** will automatically reconnect with pre approved telephone numbers that you store in the NVRAM

**"Remote Configuration"** with your hardware stored Master Password, perform remote configuration tasks from any where in the world!

**"Upgradeable"** all *QUICKTEL* products can be upgraded to incorporate faster speeds and newer features.

## TO ORDER CALL 1.800.735-6442

Visa & MC accepted

| | | |
|---|---|---|
| 28,800 DATASAFE™ | $299.00 | M2814HCX |
| 28,800 FAX/MODEM | $249.00 | M2814XV |
| 14,400 VOICE/FAX/MODEM | $219.00 | M14V14XV |
| 14,400 FAX/MODEM | $169.00 | M1414XV |

FAST CLASS · QUICKTEL EASY UPGRADE · QUICKTEL LIFETIME WARRANTY · ★★★ IN THE U.S.A.

1380 Flynn Road, Camarillo, California 93012, USA
Tel 805.388.9000 • Fax 805.388.8991

**LOGICODE, *Reshaping The Way You Communicate***

LOGICODE technology inc

Circle 297 on reader service card

# Star Ratings

OVER 300 HARDWARE AND SOFTWARE REVIEWS AT A GLANCE

**Edited by Wendy Sharp**

*Macworld Star Ratings* lets you compare hardware and software products for the Macintosh by providing summaries of *Macworld*'s authoritative product reviews from the past year. The number of stars at the beginning of each capsule review indicates quality; our reviewers assign five stars to outstanding products and one star to poor ones. The ◀ symbol indicates that a product is available in a native Power Mac version, although unless stated otherwise the version we reviewed was the 680X0 version.

If a product has been upgraded since our last review, the most recent version number supplied by the vendor appears in parentheses after the reviewed version number. To read a full review of any product in the listing, please consult the issue listed at the end of each synopsis.

Vendors: Please write to *Macworld Star Ratings*, 501 Second St., San Francisco, CA 94107 to inform us of changes in the version number or list price of your product, or of changes to your phone number.

## Software

### BUSINESS TOOLS

★★★ **4D First 1.0, ACI US, 408/252-4444, $295.** This entry-level relational database is a low-cost way to distribute the power of 4D and 4D Server to an office full of Macs. It's not much easier to use, however, than the full-fledged 4D. May 94

★★★ **Acrobat Exchange, Acrobat Distiller, Adobe Systems, 415/961-4400, $195 to $2495.** Complete, well-planned paperless office system creates application-independent viewable files that can be readily distributed on a network. Still, it's not yet as inexpensive or as convenient as you might wish. Oct 93

★★★ **@Risk 1.1, Palisade Corp., 607/277-8000, $395.** Statistical simulator for Microsoft Excel financial computations generates complex, statistically valid templates within Excel and is the first choice for analysts who work with probabilistic models every day. It assumes that the user is an Excel power user. Aug 93

★★ **BaseMap 1.0.1, GeoPoint, 415/957-1560, $149.** For simple maps displaying simple data, this map-making tool may be useful. It's not for the cartographic sophisticate, however, as it offers very limited data-display abilities and only one projection. May 94

★★★★ **ClarisImpact 1.0, Claris Corp., 408/727-8227, $399.** Business graphing, project management, object-oriented drawing, word processing, and presentation functions merge in this business graphics software. The outstanding integration offers versatility that dedicated programs are pressed to match. Jun 94 ◀

★★★★ **ClarisWorks 2.0, Claris Corp., 408/727-8227, $299.** Integrated program provides more features, is easier to use and faster, and has better integration among modules than other available programs. Aug 93 ◀

★★★★ **Common Ground 1.0, No Hands Software, 415/802-5800, $189.95.** Simple, robust document-interchange system is the clear choice for modest document-distribution jobs. In tests, it worked easily with documents from many different applications. Oct 93

★★★ **Cricket Graph III 1.5, Computer Associates International, 516/342-6000, $129.** Basic and foolproof charting program produces cleaner charts than Excel with little effort, although its feature set is fairly modest. Apr 94

★★★★ **DeltaGraph Pro 3, DeltaPoint, 408/648-4000, $195.** At its new lower price, this charting program is the best feature-for-feature value in Macintosh charting. There's even a new Chart Advisor function that suggests the appropriate display for your data. Apr 94 ◀

★★ **EasyFlow 1.1, HavenTree Software, 613/544-6035, $229.** The rough edges and distinctly un-Mac-like attributes of this flowcharting software reflect its DOS heritage, but on the whole it's easy to use. Sep 93

★★★★ **Helix Express 2.0.1, Helix Technologies, 708/465-0242, $589.** Icon-based relational-database software's improved performance makes it a serious competitor for all-Mac networks. Especially notable is its much faster speed; multiuser operation is downright snappy. Jul 94

★★★ **Helix Tracker 1.0, Helix Technologies, 708/465-0242, $439.** Well-designed workgroup-document manager has strong audit and annotation features; imposes just the right amount of administrative discipline. For large documents, however, Ethernet will look mighty attractive. Nov 93

★★ **Lotus Notes 3.0, Lotus Development Corp., 617/577-8500, $495 per client.** Well-organized, robust, and flexible business data system demands a full-time administrator, preferably with considerable programming experience, for effective use. Sep 93

★★★ **Map II 1.5, Think5pace, 519/661-4006, $395.** Well-structured program has most of the functions a simple geographical information system needs and is suitable for introductory instruction in GIS and for alert first-time users who just like maps. May 94

★★★★ **MarcoPolo 2.0, Mainstay, 805/484-9400, $395.** Inexpensive, easy-to-use product allows you or your workgroup to archive and retrieve documents, whether in electronic or paper form. Queries are easy to construct and searches are handled quickly. Sep 93

★★★ **Market Master Manager 3.5, Breakthrough Productions, 916/265-0911, $395 to $1995.** Sales-automation software is designed to keep track of contacts, generate mailings, and make sure that leads don't fall through the cracks. It includes a remote module, but it has some odd user-interface features. Oct 93

★★ **Memorizer 2.0, Brains Software Engineering, 432-231-28973 (Austria), $100.** Software records dictation and you transcribe the dictation in a word processor. You may prefer to stick with a hand-held tape recorder, considering the product's RAM and storage appetite, and its propensity to crash. Aug 93

★★★ **Micro Planner Manager 1.1, Micro Planning International, 303/757-2216, $695.** When you require cross-project resource sharing and leveling for a reasonable price, this project-management software has the edge. It has a generally intuitive interface, though there's a steep learning curve for its advanced features. Nov 93

★★★★ **Microsoft FoxPro for Macintosh 2.5, Microsoft Corp., 206/882-8080, $495.** Dazzlingly fast and easy to use relational database has a greatly improved interface and cross-platform compatibility. For projects of 4 to 20 users that handle large amounts of data it offers excellent performance. Apr 94

★★★ **Office Tracker 1.1, Milum Corp., 512/327-2255, $195 to $995.** The efficient user interface of this software sign-out board, in both single-user and networkable versions, makes it easy to learn and use; but it has some minor flaws. Dec 93

★★★★ **Pablo 2.0.1, Andyne Computing, 613/548-4355, $695.** Database-reporting tool is one of the most effective end-user data-reporting tools yet evolved. It puts a considerable workload on the corporate information department, but it sidesteps the hassles of SQL data access and produces great reports with minimal effort. Jul 94

★★★★ **Project Scheduler 5, Scitor Corp., 415/570-7700, $695.** For most midrange project-planning, this program's many hits outweigh its few misses. It goes beyond the requisite scheduling options, with inflation factors and unlimited projects in memory, and it conforms to accepted standards, so you get consistent, predictable results. Aug 93

★★★★ **TopDown 4.0, Kaetron Software Corp., 713/298-1500, $345.** Flowcharting program's support for custom symbols, multiple palettes, and automatic drawing aids, along with its ability to let you easily create and navigate lower-level charts, make it a productive tool. Jul 94

★★ **Useful Voice Processor for Macintosh 1.1v7 (1.1v9), Useful Software Corp., 508/774-8233, $179.95.** Dictation software lets you record and transcribe on a Mac. It has some useful features, but you must take uncommon care to avoid crashes. Dec 93

★★★ **Wingz 1.1ae, Informix Software, 913/599-7100, $399.** Low-overhead spreadsheet offers advanced-math functionality, a competent calculating en-

*continues*

# Star Ratings

gine and superior charts; but is missing outlining, real 3-D spreadsheet linking, and the host of third-party add-ons offered for Microsoft Excel. Jul 93

## COMMUNICATIONS/NETWORKS

★★ **AccessPC 3.0, Insignia Solutions, 415/694-7600, $129.95.** Utility translates most word-processor and some database formats, but it doesn't translate graphics and some of its translations result in data loss. Apr 94

★★★ **Crosstalk for Macintosh 2.0, Digital Communications Associates, 404/442-4000, $195.** Commendable communications product has a feature set that well matches its competition. Still, the script editing is complex and you must manually enter phone numbers each time you use it. Apr 94

★★★ **Delrina FaxPro for Macintosh 1.0, Delrina Corp., 408/363-2345, $129.** Fast, efficient fax software has an excellent address-book feature but also has some interface quirks and minor bugs. Feb 94

★★★★ **DOS Mounter Plus 4.0, Dayna Communications, 801/269-7200, $100.** File-transfer and translation utility works with floppies, removable drives, and network volumes and supports wild cards in DOS extensions. Apr 94

★★★★ **EtherPeek 2.0.3, LocalPeek 2.0.3, TokenPeek 1.0 (2.0.3), AG Group, 510/937-7900, $495 to $995.** Priced at a fraction of the cost of dedicated hardware analyzers, these network analyzer tools give you better analysis with a friendlier interface. They're a worthwhile investment. Jan 94

★★★★ **MacLink Plus/Translators Pro 7.5, DataViz, 203/268-0030, $149.** If your PC files are in archaic formats, you'll need this file-transfer and translation utility. It's a great option for most users, but it doesn't support removable drives or network volumes. Apr 94

★★★ **On The Air 1.0.1 (1.0.2), Digital Eclipse Software, 510/547-6101, $79.99 to $639.99.** Intercom system transmits System 7 SND resources, SoundEdit, and AIFF sound files across a network. It's well designed and performs decently, but its usefulness seems limited. Aug 93

★★★ **On The Road 1.1, Connectix, 415/571-5100, $99.** Helpful PowerBook utility looks at what's hooked up to your computer and adjusts accordingly—for example, printing when a printer is available and otherwise deferring printing. It only supports some hardware, however, so check before buying. Dec 93

★★★★ **Silver Cloud 1.2, AG Group, 510/937-7900, $495.** If you are administrating a large network and are drowning in a sea of devices and zones, this network-management software will make your life simpler. Feb 94

★★★ **SITcomm 1.0, Aladdin Systems, 408/761-6200, $120.** Inexpensive telecommunications software is fairly easy to set up and use, and will do well for people who use just one or two online services. Still, it lacks true scripting and has limited protocol options. Apr 94

★★★ **Snap Mail 1.01, Casady & Greene, 408/484-9228, $200 to $1440.** Software will put you on the electronic-mail trail more easily and more cheaply than any competing product, if you can live with some minor (but surprising) shortcomings. Jun 94

★★ **SoftPC 3.1, Insignia Solutions, 415/694-7600, $499.** While the speed of this Windows PC emulator is greatly improved, buying an add-in PC card for your Mac is more efficient. Mar 94

★★★★ **Timbuktu Pro, Farallon Computing, 510/814-5000, $199 to $1999.** Terminal emulation product is a must-have for in-house technical-support staff and for people who need direct connection to computer systems on a variety of networks. The major enhancements of this version are TCP/IP support for Macs and noticeably faster screen redraw. May 94

★★ **TrafficWatch II 2.0, Neon Software, 510/283-9771, $495.** The price of this AppleTalk traffic monitor is closer to that of full-blown network analyzers that do much more, albeit with greater complexity. Without printing, alarms, triggers, or true multiprotocol support, this product misses the mark. Jun 94

★★★★ **VersaTerm 5.0, Synergy Software, 215/779-0522, $195.** The price and feature set of this network terminal-emulation package make it a terrific value, in spite of its complex documentation and limitations. If you're looking for a fast path to Internet connectivity, this is it. Jan 94

## DESKTOP PUBLISHING

★ **AboutFace 1.1.1 (1.1.2), Big Rock Software, 716/288-2860, $69.95.** Type-specimen generator has many serious deficiencies that need to be addressed. Jan 94

★★★★ **Aldus Fetch 1.0, Aldus Corp., 206/622-5500, $295.** The rich feature set and network support of this image-cataloging software make it a clear winner. Although cataloging is slow, users have fine control of the depth and compression of thumbnails. Aug 93

★★★★ **Aldus PageMaker 5.0, Aldus Corp., 206/622-5500, $895.** Desktop publishing software has added the features, both great and small, that it's been lacking, while still retaining the ease-of-use advantages that it's always had. This is a superb upgrade. Nov 93

★★★ **Cumulus 1.1 (1.2), Canto Software, 415/431-6871, $295 to $895.** Good network support, plus a feature that creates a protocol file for recording user actions, make this image-cataloging program a good choice for workgroups. It doesn't have an image-preview feature, nor does it offer 32-bit thumbnails. Aug 93

★★★★ **FontMonger 1.5.7, Ares Software Corp., 415/578-9090, $149.95.** Font-conversion utility provides cross-platform, cross-font conversion and makes it easy to create composite, subscript, superscript, and rotated characters. Sep 93

★★ **FotoTune 1.1, Agfa Division of Miles, 508/658-5600, $795.** Color-management software has a capable engine, but it's not the complete color management system Agfa touts. Invisible tech support and poor documentation were only part of the problem. Apr 94

★★★★ **FrameMaker 4.0, Frame Technology Corp., 408/433-3311, $895.** For such projects as long, structured documents—books, instruction manuals, and textbooks—this desktop publishing program is one of the best tools available. It's fast, well mannered, and a real time-saver. Mar 94

★★ **ImageAccess 1.0, Nikon, 516/547-4355, $495.** This expensive image-cataloging program has an unusual interface and cannot be used over a network. A plug-in module provides direct support for Nikon's LS-3510AF film scanner. Aug 93

★★★ **Kodak ColorSense 1.0, Eastman Kodak, 716/253-0740, $499.** Color-management system gives average users access to a reasonable level of color consistency at a reasonable price. It does not make color separations. Oct 93

★★ **Kudo Image Browser 1.0 (1.1), Imspace Systems Corp., 619/272-2600, $195.** This image-cataloging software cannot control thumbnail depth or compression and doesn't have a keyword feature or allow multiple users to access the catalog simultaneously. The unique Riffle feature lets you quickly scan images. Aug 93

★★★★ **Print Shop Deluxe, Broderbund Software, 415/382-4400, $50.** Even the most ham-fingered can create professional-looking greeting cards, signs, banners, letterhead stationery and calendars with these desktop publishing templates and graphics. While it's not a substitute for a high-end program, it is easy to use and inexpensive. Apr 94

★★★★ **QuarkXPress 3.2, Quark, 303/894-8888, $895.** This upgrade adds the EfiColor XTension to ensure the greatest possible fidelity of color images and is a must-have for professional color publishers who use Quark. For others, the enhancements are welcome but minor enough that they provide little incentive to upgrade. Nov 93

★★★★ **Tableworks Plus 1.05, Npath, 206/392-7745, $299.** Publishing utility adds a full table-editor to QuarkXPress and is a must-have for anyone doing even mildly complex tables. Jan 94

## EDUCATION

★★★★ **Grolier Multimedia Encyclopedia, Grolier Electronic Publishing, 203/797-3530, $395.** CD-ROM encyclopedia has excellent search capabilities, weighs much less than a shelf of books, and is lots of fun. Its timeliness and some hierarchical snafus were slight problems. Jul 94

★★★★ **How Computers Work, Time Warner Interactive Group, 818/955-9999, $79.99.** Graceful, well-integrated CD-ROM tutorial guides the curious through brief but helpful explanations of basic computer technologies. Jan 94

★★★ **HyperStudio, Roger Wagner Publishing, 619/442-0522, $179.95.** Hypermedia authoring tool supports color and many multimedia functions through easy-to-use dialog boxes, but the interface doesn't always follow Apple guidelines. Dec 93

★★★ **MacGrade 1.5.5, CalEd Software, 800/795-0641, $85 to $245.** Grade-book program has a straightforward, simple interface and clear documentation. Although there's room for improvement, it's easy to use and flexible. Feb 94

★★★★ **The Rosetta Stone, Fairfield Language Technologies, 703/432-6166, $395.** Foreign-language instruction on CD-ROM is a valuable educational tool and fun to use. The lessons are well paced, and the content is generally excellent and diverse. Jan 94

★★★ **Small Blue Planet 1.2.1, Now What Software, 415/885-3432, $79.95.** Nicely integrated collection of beautiful Earth-from-space images on CD-ROM lacks many features of standard atlases and doesn't have a search function, but is endlessly fascinating. Jul 94

## ENTERTAINMENT

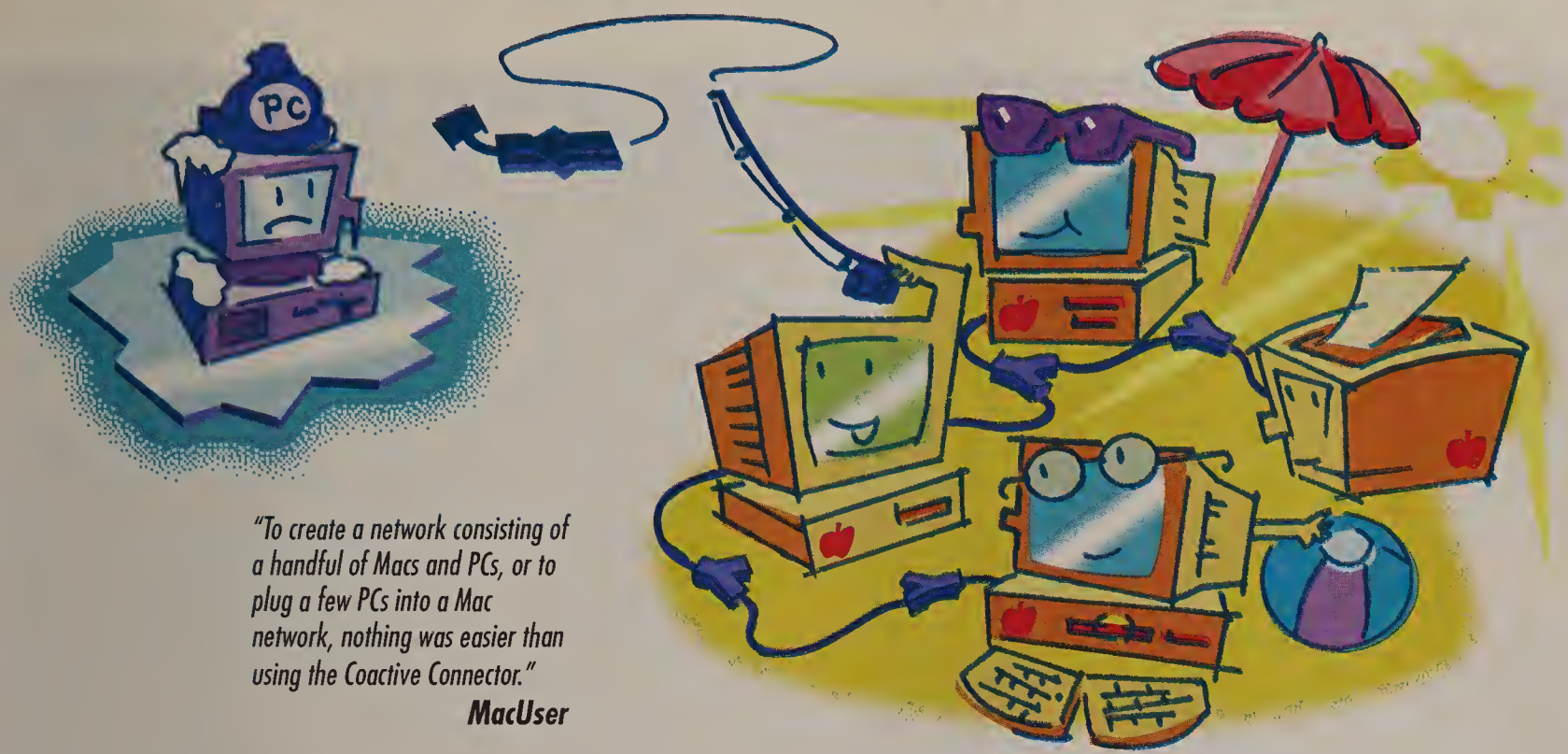
★★★ **BlackJack Trainer, ConJelCo, 412/492-9210, $75.** Learn the strategies you need to win at blackjack with this program. There are a number of trivial bugs, but they won't get in the way. Oct 93

★★★★ **Crystal Crazy, Casady & Greene, 408/484-9228, $49.95.** Ultraglossy, superpolished version of the classic Crystal Quest is challenging and fun without being overly difficult. Each level retains some old elements, and adds some new ones to keep you on your toes. Jun 94

★★★ **Daily Sports Quiz 1.0, DreamTime, 619/236-1341, $49.95.** If you think you know a lot about sports and love to play trivia games, then this entertaining

*continues*

# CONNECT PCs TO APPLETALK™ NETWORKS. IN JUST 5 MINUTES. GUARANTEED.



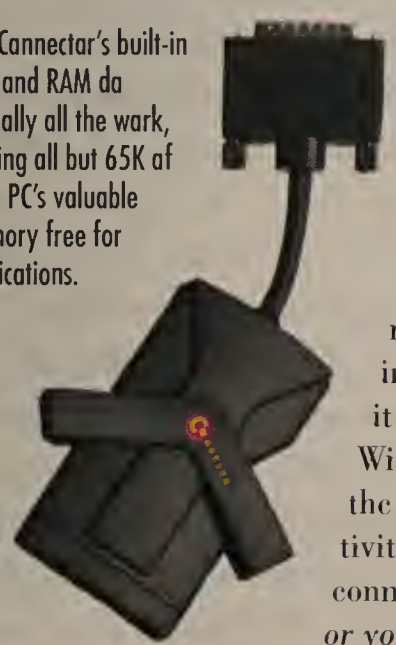

*"To create a network consisting of a handful of Macs and PCs, or to plug a few PCs into a Mac network, nothing was easier than using the Coactive Connector."*
**MacUser**

Whether you use your Macintosh™ in a small company, home office, or workgroup, there's probably at least one Windows™ or DOS PC not far from you.

And, while all of your Macs are probably connected to an AppleTalk network, chances are the PC is *not*. Instead, it's left shivering out in the cold—unavailable for file and printer sharing with your Macs and AppleTalk printers.

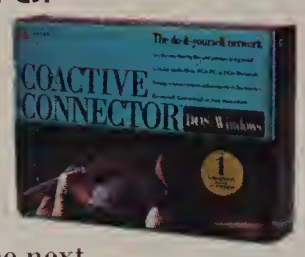
## IT DOESN'T HAVE TO BE LIKE THIS.

Now there's an easy way to connect your PCs to your Macintosh network, so that *all* of your computers can share printers and files. It's called THE CONNECTOR™ from Coactive. And in no more than 5 *minutes** of installation time per PC, it will let your DOS and Windows colleagues enjoy the simplicity and productivity of AppleTalk connectivity. *Guaranteed, or your money back!*



The Connector's built-in CPU and RAM do virtually all the work, leaving all but 65K of your PC's valuable memory free for applications.

## APPLETALK PLUG 'N' PLAY FOR PCs.




With Coactive, there's no need to open the PC to install a complicated networking card. Instead, The Connector plugs right into the PC's external parallel printer port. Load Coactive's PC software, connect to the next computer with simple telephone wire (included), and your Mac-to-PC network is complete.

## PCs CAN PRINT TO APPLE LASERWRITERS™.

Now your Macs can exchange files with Windows and DOS PCs. And, your PCs can share high-quality AppleTalk PostScript™ printers like the Apple LaserWriter. Best of all, there's nothing new to learn. You and your PC co-workers use your computers just as you always have. What could be easier?

To purchase The Connector, visit your favorite retailer. Or, call **1-800-PC SHARE, EXT. 162** to order direct for $149.95—25% off the suggested retail price. Plus, you'll receive a FREE copy of *Common Ground*™** for Windows or Macintosh, a $189.95 value!

** Common Ground lets you distribute documents that anyone can view, regardless of their applications, computer, or fonts.

COACTIVE

*Excluding cabling time.
Coactive and The Connector are trademarks of Coactive Computing Corporation. Apple, Macintosh, AppleTalk, and LaserWriter are trademarks of Apple Computer, Inc. Common Ground is a trademark of No Hands Software. Other trademarks are the property of their respective holders. Portions manufactured under patent license from Farallon Computing, Inc., and under license from Apple Computer, Inc.

**Circle 142 on reader service card**

# "When People See What We've Done On The Desktop With VideoVision Studio, They Can't Believe Their Eyes."

Flavio Kampah heads KampahVisions, a broadcast design studio, directing and producing trend-setting, award-winning music videos and television graphics, including the U2 music video, Even Better Than The Real Thing. Flavio became a VideoVision Studio™ devotee while creating a new opening for the American Gladiator TV program and a series of promo spots for ESPN2 and Avirex Jeans.

"Until VideoVision Studio, it wasn't quite there yet. The motion, in particular, wasn't right. But with VideoVision Studio, we can use the Mac to produce work for broadcast television."

VideoVision Studio gives full-screen, full-motion video directly from a Macintosh®. It's a complete, no-compromise, professional quality, 24-bit, QuickTime-based video production system under $4,500.

"After working for years with traditional high-end computer graphics equipment, I'm convinced the Macintosh and technologies like Radius' VideoVision Studio are the most exciting designer tools in broadcast today. It puts control of the creative content back in the hands of the creator."

© 1994 Radius Inc. Radius, the Radius logo, "How The Best Get Better" and all Radius product and service names are trademarks of Radius Inc. All other names are trademarks of their respective holders. 3/21/94

VideoVision Studio radius™

How
The
Best
Get
Better.™

VideoVision Studio lets you input, capture, display, edit, add special effects, mix sound and output full-screen video at 30 frames and 60 fields per second. It comes with the hottest video editing and effects software, Adobe Premiere™ and VideoFusion.™ And VideoVision Studio is backed by our Lifetime Worry-Free™ Warranty and onsite, overnight replacement guarantee.

No other desktop system offers you such an incredible array of capabilities, so incredibly priced.

"The way the system works it's very easy for anybody to create high quality videos without the cost of a high-end editing suite."

Call 1-800-227-2795 Ext. 88C for more information about no-compromise desktop video production and the name of your nearest Radius reseller. For faxed information, call 1-800-966-7360.

**Circle 146 on reader service card**

# Star Ratings

and informative game is for you. Oct 93

★★★★ **Falcon MC 1.0, Spectrum HoloByte, 510/522-1164, $69.95.** Whether you're an armchair jet jockey or an experienced fighter pilot, you're bound to be impressed by the 4-bit color, enhanced graphics, and sophistication of this latest incarnation of the original Macintosh combat flight simulator. Dec 93

★★★ **Firefall Arcade, Inline Software, 203/435-4995, $49.95.** If you loved the classic video game Centipede, or are just looking for a fun shoot-'em-up, this arcade-style game will satisfy. Jun 94

★★★ **Hell Cab 1.0.1, Time Warner Interactive Group, 818/955-9999, $99.99.** Take a diabolical New York cabbie with a penchant for time travel, toss in the Empire State Building, add a few brainteasers, and you've got this engaging game on CD-ROM. It's slow and the arcade sections are hard to control, but overall it succeeds. Jan 94

★★★ **Indiana Jones and the Fate of Atlantis, LucasArts Games, 415/721-3394, $59.95.** In this game, the whip-wielding archaeologist goes looking for Atlantis and finds it armed to the gills with magical technology and Nazi stooges. If you're not bothered by the story's astonishing sexism, you'll find it diverting. Oct 93

★★★ **The Journeyman Project 1.0 (1.2), Presto Studios, 619/689-4895, $79.95.** Interactive science-fiction epic on CD-ROM is a work of art. The scenes are rich with painstakingly detailed graphics, elaborate models, and subtle textures, but the sluggish pace may leave you impatient and bored. Sep 93

★★★★ **Myst 1.0, Brøderbund Software, 415/382-4400, $59.95.** The smooth pacing of actions and sounds in this beautiful CD-ROM game give it a dreamlike quality. This is a game that's been polished until it shines. Mar 94

★★★★ **Seven Days in August, Time Warner Interactive Group, 818/955-9999, $59.99.** Compelling, interactive documentary on CD-ROM cuts a slice from history and offers August 10 through August 16, 1961, (the building of the Berlin Wall) to viewers in a way that truly evokes the period. Oct 93

★★★★ **SimCity 2000, Maxis Software, 510/254-9700, $69.95.** In essence, your goal with this marvelous city-simulation software is to build a city and run it successfully. The game is fascinatingly complex, but it's simple to use, and the elaborate graphics are so lovely that it's even fun just to watch. Jun 94

★★★★ **Spectre Supreme, Velocity Development, 415/274-8840, $69.95 to $89.95.** The pleasure of this game comes not in high scores, but in the almost addictive sense of control you get from moving your tank around the screen. It's so much fun that it's even fun when you lose. Dec 93

★★★★ **Spin Doctor, Callisto Corp., 508/655-0707, $59.95.** In the tradition of the best Macintosh games, this game tests your wits and reflexes alike. It's part strategy game, part kinetic sculpture. Jun 94

★★★ **V for Victory: Utah Beach, Three-Sixty Pacific, 408/879-9144, ext. 23, $69.95.** The post–D-Day conquest of Normandy is re-created in this game; its strength is the way it blends easy play with complicated strategy. Some bugs exist. Oct 93

## FINANCE/ACCOUNTING

★★★★ **Andrew Tobias' TaxCut 1993, MECA Software, 203/255-1441, $79.95.** The free-form approach and flexible Help menus of this tax-preparation software make filling out your tax return a smooth, almost relaxing process. The only state versions available are California and New York. Apr 94

★★★★ **BestBooks 1.0, Teleware, 201/586-2200, $99.** In a straightforward, unintimidating manner, this small-business accounting program integrates the standard bookkeeping functions of accounts receivable, accounts payable, and general ledger. Jul 93

★★★ **ExpensePlus 1.0.1, State of the Art, 714/753-1222, $139.95 to $159.95.** Software uses a Newton MessagePad to record expenses, then sends the data to a Mac to create and print expense reports. While it's a real time-saver, you'll need AppleScript expertise to modify the expense reports. Apr 94

★★ **Financial Competence 1.5, Competence Software, 603/435-5098, $99.** Business economics tutorial explains how financial statements are compiled and how they relate to each other, but you could learn the same things from a book, faster and for less money. And that might be the more financially competent thing to do. Jul 94

★★★★ **MacInTax 1993, ChipSoft, 602/295-3110, $69.95.** Tax-preparation software provides a reasonably detailed manual and a reliable, structured interface for building your tax return. Its inability to accept figures containing amounts in cents or round off to whole dollar amounts will frustrate some users. Apr 94

★★★ **MacInTax Tax Planner, ChipSoft, 602/295-3110, $19.95.** Software allows you to construct a five-year forecast of your tax liability, projecting tax figures through 1997 in a concise summary format. If you have a tax preparation program, you can do the same thing by creating alternative tax returns. Apr 94

★★★ **MacInTax Tax Savings Guide, ChipSoft, 602/295-3110, $19.95.** Simple, straightforward collection of well-written, fully indexed tax tips and suggestions is designed to help you better understand your tax return and reduce your tax liability. Although strong in content, it doesn't allow you to copy and paste, export as a text file, or even print. Apr 94

★★★ **MacMoney 4.01, Survivor Software, 310/410-9527, $89.95.** Personal-finance software has new and improved features that will please longtime users, but it hasn't kept up with the leaders in the field and won't win many new converts. Jul 94

★★★ **Managing Your Money 6.0, Meca Software, 800/820-7457, $79.95.** Personal-finance program does a good if somewhat roundabout job of keeping track of your total financial picture. Although it isn't as easy to use as the competition, it excels in tax, investment, and financial planning. Jun 94

★★★★ **Quicken 4, Intuit, 415/858-6095, $69.95.** Personal-finance software is powerful and easy to learn, even for a financial neophyte. Although slower than previous versions, 4.0 lives up to its promise of making financial chores easier and better organized. Nov 93

## GRAPHICS

★★★ **addDepth 1.0.2, Ray Dream, 415/960-0768, $179.** The purpose of this graphics program is to enhance the creation of 2-D images with 3-D effects. It's versatile, accommodating, and affordable, but working on complex images gets tedious because of the automatic application of styles. Aug 93

★★★★ **Adobe Illustrator 5.0, Adobe Systems, 415/961-4400, $595.** The Mac's most dependable draw program has added enough new features to boggle the mind. It still can't import TIFF images, but it catches up with, and in some areas surpasses, the competition. Nov 93

★★★★ **Aldus FreeHand 4.0, Aldus Corp., 206/622-5500, $595.** The new page-design and text-editing functions of this powerful draw program make it more than worth the price of admission. Aside from some bewildering interface elements, it's an outstanding program. Mar 94

★★★★ **Alias Sketch 1.5, Alias Research, 416/362-9181, $995.** The enhanced modeling and revamped rendering capabilities of this 3-D illustration program contribute to a tremendous and reliable upgrade, a heartening example of a company listening to its users. Jul 93

★★★★ **Blueprint 4, Graphsoft, 410/290-5114, $295.** Entry-level 2-D drafting program is a wonderful antidote to the complicated CAD system blues. Don't be misled by the low price; this full-fledged drafting package is powerful enough to serve professionals who appreciate the value of simplicity. Jul 93

★★ **BrushStrokes 1.0, Claris Clear Choice, 408/727-8227, $139.** If you have absolutely no experience with computer graphics, the simplified interface of this 24-bit paint program might warrant its price. Otherwise, you can find better programs for less. Oct 93

★★★ **CA-Cricket Draw III 2.0 (2.01), Computer Associates International, 516/342-5224, $249.** This draw program is not going to inspire experienced Mac artists to jump up and down, but its features are abundant, the interface is straightforward, and the price is right. Oct 93

★★★ **Canvas 3.5, Deneba Software, 305/596-5644, $399.** Draw program offers two to three times as many features as any competing program, but our reviewer would prefer an interface that you can navigate without scrambling for the manual. Jan 94

★★★ **Collage 1.0.1, Specular International, 413/253-3100, $349.** Image-compositing software is a flawed but serviceable tool that allows you to combine and composite multiple RGB images stored in PICT, TIFF, and Photoshop 2.5 formats. While it's functional and indisputably easy to use, its oversights, including slow screen redraw with no interrupt option, are nearly as numerous as its benefits. Jul 94

★★ **ColorUp 1.0, Pantone, 201/935-5500, $99.95.** Professional graphic designers don't need the advice of this color tutorial and series of palettes. Although nonprofessionals might benefit from the information on color theory, it may not be worth the money. Nov 93

★★★★ **DeBabelizer 1.5 (1.5.5), Equilibrium Technologies, 415/332-4343, $299.** Bitmapped-graphics-conversion software supports a huge number of file formats and can work wonders. If you spend any significant time dealing with file conversion, you should have this program. Nov 93

★★★ **DesignWorkshop 1.0 (1.1), Artifice, 503/345-7421, $895.** The accessible interface and versatile modeling environment of this 3-D modeling software may be worth the fairly high price, particularly for architectural-design conceptualization. May 94

★★★ **Expert Draw 1.0, Expert Software, 305/567-9990, $49.95.** Inexpensive draw program is not really for experts, but it offers a decent, no-frills set of basic drawing tools and commands for beginning illustrators, office use, or anyone on a budget. Aug 93

★★★★ **Folio 1 Media Kit-Print Pro, D'Pix, 614/299-7192, $499.95.** Each image in this texture collection on three CD-ROMs provides a dynamic range of colors, highlights, and shadows; is free of artifacts; and is crisply focused. Aug 93

★★★★ **Fractal Design Painter 2.0, Fractal Design Corp., 408/688-8800, $399.** If you can put up with a few inconveniences, this color paint software pro-

vides the tools required by professional artists, and many of its functions—natural-media brush tools, the color-sensitive magic wand—are entirely without peer. Jul 93

★★★ **Generic CADD 2.0, Autodesk, 206/487-2233, $495.** Competent, midlevel 2-D drafting program has a well-executed Mac interface, a good complement of tools, and a sprinkling of high-end features, such as floating-point precision. Aug 93

★★★ **Infini-D 2.5.1, Specular International, 413/253-3100, $695.** Serviceable 3-D graphics program has a wide range of modeling, rendering, and animation options, with a straightforward interface and quick operating speed. Feb 94

★★★★★ **Kai's Power Tools 2.0a, HSC Software, 310/392-8441, $199.** Phenomenally powerful suite of Photoshop plug-ins have an addictive quality typically associated with arcade games. There's no end to the automated effects you can generate, the ways you can apply them, and the artwork you can create. May 94

★★★★ **MacroModel, Macromedia, 415/252-2000, $1495.** This 3-D modeling software is a solid resource to have along when you venture out into 3-D space. The interface is elegantly simple, making the Mac's inner space a more pleasant place to work. May 94

★★★ **Ofoto 2.0 (2.02), Light Source Computer Images, 415/461-8000, $395.** Many new features—notably color support—have been added to the already impressive toolbox of this scanning software. It often produces good results, but it rarely produces the best scan possible for a given image and output method. Jul 93

★★★★ **Paint Alchemy 1.0, Xaos Tools, 415/487-7000, $99.** For the price, these plug-in graphics effects are a tremendous value that both casual users and professional artists can use to design a little chaos into their work. May 94

★★★ **Pointillist, Pictor GraFX, 310/865-0495, $39.95.** Stereogram software creates images that look, at first glance, like random dots, but as you focus beyond the page, a 3-D image emerges from the pattern and appears to hover inches in front of the background. It's gleefully wacky. Jul 94

★★★★ **PosterWorks 3.0, S. H. Pierce & Co., 617/338-2222, $395.** This large-format graphics production tool is for people who think big, up to 10,000 square feet big. It fills the need for user-defined, full-color, large-format output robustly and elegantly. Aug 93

★★★★ **PowerDraw 4.0 (5.0), Engineered Software, 910/299-4843, $795.** The best new feature of this polished 2-D drafting program is an open architecture that supports modules that let you customize the program with application-specific tools, floating palettes, and menu commands. Sep 93

★★ **Ray Dream Designer 3.0.3, Ray Dream, 415/960-0768, $349.** Although this 3-D–illustration software remains a price leader, unstable operation, misbehaving features, and sluggish performace are problems that need to be rectified. Jul 94

★★★★ **Showplace 2.0, Pixar, 510/236-4000, $495 to 695.** Adequate, entry-level, 3-D modeler is suitable for illustration and other graphic arts applications. This version offers improved access to MacRenderMan, one of the best renderers around, plus plug-in modeling tools. Apr 94

★★★ **StrataVision 3d 2.6.3, Strata, 801/628-5218, $995.** 3-D program includes animation, and is a superior rendering tool and versatile modeler. It's a challenge to learn, however, as the interface is overly dense and sometimes sluggish. Feb 94

★★★★ **StudioPro 1.0, Strata, 801/628-5218, $1495.** If you need a well-balanced, all-in-one 3-D modeling, rendering, and animation solution, this application is an excellent choice. Mar 94

★★★ **Transverter Pro 1.0 (1.51), TechPool, 216/291-1922, $395.** Remarkable graphics-conversion software can read PostScript files and convert them to a variety of formats. As you might expect of a program attempting to fill such a tall order, its conversions are not always flawless, but it can be a lifesaver nonetheless. Nov 93

★★★ **Typestry 2.0, Pixar, 510/236-4000, $299.** An approachable interface, animation support, and outstanding Renderman rendering technology make this 3-D type-renderer a popular choice. This version improves on the original, but still lacks canned positioning effects. Jun 94

★★★ **upFront 2.0, Alias Research, 416/362-9181, $299.** Capable modeler is something of an acquired taste. However, take the time to learn it and you'll find useful, if unconventional and demanding, tools that are well suited for architectural modeling. Jan 94

★★★ **Virtus WalkThrough 1.1, Virtus Corp., 919/467-9700, $195.** Interactive 3-D modeling tool provides instantaneous access to rendered 3-D scenes, allowing you to travel through models at will. While it has some problems (such as occasionally just quitting), it's an excellent value. Jul 93

★★★ **Wraptures One, Wraptures Two, Form and Function, 619/536-9999, $95 each.** The images in these texture collections on CD-ROM are generally acceptable, although some are muddy and others are difficult to decipher at low resolutions. If you need images for repeating patterns, however, these repeat seamlessly and are a good value. Aug 93

## MATH/SCIENCE

★★★ **Alchemy III, Tripos Associates, 314/647-1099, $950.** Molecular-modeling software can model decapeptides and DNA fragments, in addition to the expected small molecules, with refreshing alacrity on a Mac IIci or better. Sep 93

★★★ **Amazing Universe 2.1 (2.1a), Hopkins Technology, 612/931-9376, $79.95.** Space-image exploration package on CD-ROM offers an amazing variety of astronomical images with a very competent program (ProVision II) for modifying and inspecting those images. It assumes that users won't be fazed by such things as writing their own image-convolution matrices. Aug 93

★★★★ **Caduceus Science Review Macintosh Project 1.0, Scientia, 617/776-3427, $150 to $250.** If you're taking the MCAT, you'd be nuts not to buy this interactive science review. With proper use, its 9MB of files are certain to improve your score. Apr 94

★★★★ **CircuitMaker 3.0, MicroCode Engineering, 801/226-4470, $199.95.** Much of the tedium of diagramming circuits and constructing prototypes is relieved by this digital circuit simulator that provides a powerful set of basic tools for a very reasonable price. Aug 93

★★★★ **CSC ChemOffice 2.0, Cambridge Scientific Computing, 617/491-6862, $995 to $1595.** Comprehensive chemistry software is the Mac equivalent of software that seven years ago would have cost $200,000 and required an equally costly minicomputer. It's a winner. Feb 94

★★★ **f(z) 6, Lascaux Graphics, 602/299-0661, $115.** The main problem this math software attacks is four-dimensional visualization. It costs slightly more than a textbook, making it a great educational bargain. Sep 93

★★★ **InStat 2.01, GraphPad Software, 619/457-3909, $95.** For scientists with limited statistics backgrounds, the chatty clarity of this lab-oriented statistics software's help screens will be invaluable, while the limited variables and minimal graphics won't be a problem. Nov 93

★★★★ **LabView for Mac 3.0.1, National Instruments, 512/338-9119, $1995.** For large-scale, demanding projects in data acquisition and analysis, this scientific software is an unchallenged standard, in a class by itself. Jul 94

★★★★ **Mathematica 2.2, Wolfram Research, 217/398-0700, $595.** The one essential program in science and mathematics adds a function browser that makes the program as easy to use as it should be, as well as improvements to computational routines. Sep 93

★★★ **QC Tools 1.0, Abacus Concepts, 510/540-1949, $245.** Quality-control tool kit for StatView appears to introduce a slight slowdown in program response, but is generally well designed, well documented, and suitable for quality-control neophytes as well as professionals. Jan 94

★★★★ **Resampling Stats 1.0, Resampling Stats, Inc., 703/522-2713, $225.** Innovative statistics software has proved itself to be a superior teaching tool in numerous classroom tests. If you have any interest in statistics, you should give this admirably straightforward approach careful consideration. Jun 94

★★★★ **SerePlot 2.12, Scientfic Visions, 301/593-0317, $135.** If you have piles of data and don't need animated, exploding bar-charts in 24-bit color, this scriptable plotting software should be part of your analysis tool kit. Jun 94

★★★★ **Spyglass Dicer 2.0, Spyglass, 217/355-6000, $695.** Scientific 3-D visualization tool displays a two-dimensional slice through a three-dimensional object (which is represented in the computer by a data table). While Dicer pushes the limits of the Mac hardware, for its function this product is really the only game in town. Jul 93

★★★ **Spyglass Transform 3.0 (3.01), Spyglass, 217/355-6000, $595.** Scientific-visualization software can access data stored in every common format, offers some useful presentation-graphics features, and includes a programming language with a large range of built-in, high-level scientific functions. Sep 93

★★★★ **StatView 4.01 (4.02), Abacus Concepts, 510/540-1949, $595.** If your work uses statistics for decision support rather than abstract analysis, and you regularly have to present your results to nonstatisticians, this is the statistics package for you. Oct 93

★★★ **Sum Total 1.01, Concurrent Engineering Tools, 602/464-8208, $99.95.** Exceptional calculator utility is packed with advanced features, including a mode that lets you sample colors and use the numerical color values in calculations. The convenient palette approach causes a distinct time-lag in menu operations. Oct 93

★★★★ **Turing's World 3.0, CSLI Publications, 312/568-1550, $19.95.** Computer-science educational software lets you investigate some fundamentals in computing at an almost unbelievable bargain price. Feb 94

★★★★ **Visualization of Natural Phenomena, Telos/Springer Verlag, 408/249-9314, $59.95.** CD-ROM introduction to applying all aspects of computer graphics to scientific imaging covers all disciplines and offers definitive analysis of methods. No other source covers this much material, at this level of clarity. Jan 94

## ORGANIZATION/PRODUCTIVITY

★★★ **Achieving Your Career 1.02 (1.04), Up Software, 415/921-4691, $69.** HyperCard-based job-

*continues*

INTRODUCING OneWorld Fax NETWORK FAX SERVER

Talk about perception versus reality. Like something out of a science fiction movie, faxing came into being to move documents along at the speed of light. But in reality, "moving" hasn't been the activity most associated with faxing. "Waiting" has. Waiting for the document to print. Waiting in line. Waiting for the fax to go through. A situation where things can get so bottlenecked, an entire office can be reduced to a crawl.

Well, at Global Village Communication,™ we're happy to report a way to get everyone up to speed again.

And because OneWorld Fax sends faxes in the background over the network, you don't tie up your computer when faxing. You keep right on working.

You save money, too: Printing costs fall when you fax from your computer. Phone bills can be reduced since faxes can be scheduled to take advantage of off-peak phone rates. And, of course, you save valuable time.

And if all this news weren't good enough, OneWorld Fax is easy to install. Everything you need – all the hardware and software – is built into a single,

# THE PROMISE OF FAX MACHINES IS TO HELP PEOPLE WORK AT A FASTER PACE. THEN, OF COURSE, THERE'S THE REALITY.

With something we call OneWorld™ Fax, the fax server that lets everyone on a network of Apple Macintosh computers fax right from their desk. With OneWorld Fax, everyone in the office can send faxes – to one person or to many – with just a few clicks of the mouse. It's as easy as printing, thanks to the industry-acclaimed GlobalFax™ software used in OneWorld Fax.

self-configuring package smaller than a toaster. Anyone can install it, in a matter of minutes.

But, before you go, here's something else to consider: OneWorld Remote Access – a complete, easy-to-use ARA server for providing access to AppleTalk networks from remote Macintosh and PowerBook computers.

So. There you have it. Two ways to get everyone in your office up to speed again. Now isn't it time you got moving? For more information and for the Global Village dealer nearest you, call 1-800-736-4821, ext. 2246.

**Circle 156 on reader service card**

©1994 Global Village Communication, Inc. Global Village Communication, the Global Village Communication logo, GlobalFax, and OneWorld are trademarks of Global Village Communication, Inc. AppleTalk® Remote Access is licensed from Apple Computer, Inc. All other brand names are trademarks of their respective companies. A special thank you to the snails who graciously lent their shells, and the Wee-Fit Clothing Outfitters for their ingenious turtleneck sweaters which kept the snails warm until their homes were returned.

# Star Ratings

search software succeeds by compactly organizing. It provides a structure for identifying letters to write, phone calls to make, and interviews to follow up. Aug 93

★★★★ **Arrange 1.1, Common Knowledge, 415/325-9900, $349.** This personal information database's flexible, intuitive approach to data-handling makes it an excellent tool for storing all kinds of day-to-day information. May 94

★★★★ **CalendarMaker 4.0, CE Software, 515/224-1995, $59.95.** Polished, intuitive calendar-making program is straightforward, with a variety of options for customizing your calendar. Some features can be cumbersome. Oct 93

★★ **ClienTrac 1.7.1 (1.7.2), Whiskey Hill Software, 415/851-8702, $135.** Easy-to-use, HyperCard-based contact-management software performs as billed, but fails to inspire much enthusiasm. Aug 93

★★★ **Contact Ease 2.0.1 (2.0.2), WestWare, 619/274-5053, $395 to $1495.** Contact-management and sales-automation software helps salespeople keep in touch with contacts, makes it easy to generate letters, and maintains detailed records of activities. It has a few quirks but is overall a good program. Aug 93

★★★★ **DateBook and TouchBase Pro Bundle, Aldus Corp. Consumer Division, 619/558-6000, $149.95.** Calendar and contact manager offer a superior combination of integration, usefulness, and features. If you want to get organized, make sure you look at this dynamic duo. Feb 94

★★★★ **In Control 2.0, Attain Corp., 617/776-1110, $89.95.** The best features of an outlining program are combined with those of a database, making it easy to sort, search, organize, and print your to-do list. Aug 93

★★★ **Now Contact 1.0 (1.0.1), Now Software, 503/274-2899, $99.** This contact manager has some innovative features and could easily become the top address-book program for the Mac by adding some features, such as file reconciliation. Mar 94

★★★ **Power Team 1.0, ProVue Development Corp., 714/892-8199, $149.95.** Personal information manager consists of seven modules: Phone Book, Calendar, Correspondence, Checkbook, Calculator, Expense Report, and Mailing List. It has some bugs, but the data entry features are excellent. Oct 93

★★ **Rae Assist 1.0.2, Rae Technology, 408/725-2850, $199.** Although this personal information manager offers some fresh ideas, including automatic linking of company and contact information, it's too big and too slow. Jan 94

## PRESENTATION TOOLS

★★★★ **Adobe Premiere 3.0, Adobe Systems, 415/961-4400, $695.** Solid and dependable QuickTime video-editing software offers a structured, responsive, and flexible interface with enhancements that range from the mundane to the dramatic. It can now mix 99 tracks. Jan 94

★★★★ **Astound 1.0, Gold Disk, 408/982-0200, $399.** Presentation software lets you include sound, text, and graphics animation with no more effort than pasting in a chart in other products. It's a good value. Nov 93

★★★★ **Authorware Professional 2.0.1, Macromedia, 415/252-2000, $4995.** Multimedia-scripting and -presentation software lets you develop complex presentations with amazing speed. Although expensive, it's wonderfully done and will pay for itself in time saved. Feb 94

★★★ **Avid Video Shop 2.0, Avid Technology, 508/640-6789, $499.** QuickTime video-editing program shines in its intuitive, easy-to-use interface, although it may fall short on features for hard-core video professionals. Feb 94

★★★★ **CoSA After Effects 1.1, CoSA, 401/831-2672, $1295.** QuickTime movie editor blurs the boundaries between animation and traditional video-editing. It produces results that simply can't be created in other packages. Oct 93

★★★ **Deck II 2.1, OSC, 415/252-0460, $399.** AV Macs turn into digital-audio workstations with this software that enables you to record, mix, modify, and play back CD-quality sound. It doesn't include equalization features. Jun 94

★★ **Elastic Reality 1.0, ASDG, 608/273-6585, $349.** Exciting morphing tool can create professional-caliber results—if you can figure out how to use it. The needlessly convoluted interface, poor documentation, and inadequate tech support make that a difficult task. Feb 94

★★★★ **FlipBook 1.0, S. H. Pierce, 617/338-2222, $89.** Animation printing utility lets users make flip-books (consisting of a series of printed images that, through application of an extremely technical thumb-and-forefinger method, appear to move) out of QuickTime movies, PICS animations, and Scrapbook files. Jun 94

★★★★ **Morph 2.0, Gryphon Software, 619/454-6836, $239.** Easy to use morphing software is beautifully designed, with delightful new features, including the ability to morph QuickTime movies. Using it is as painless as morphing gets. Apr 94

★★★ **Passport Producer Pro 1.0, Passport Designs, 415/726-0280, $995.** Superb, albeit quite expensive, media-integration package makes assembling even complex presentations surprisingly easy. Path animation is limited to entrances and exits. Apr 94

★★★ **QuickFlix 1.0, VideoFusion, 419/891-1090, $149.** Approachable QuickTime moviemaking software lacks the high-end features of other programs but costs a whole lot less. Feb 94

★★★ **VideoFusion 1.0.1 (1.5), VideoFusion, 419/891-1090, $649.** Collection of special effects for QuickTime movies may not be for the casual user, but if you have the equipment and you can't live without spinning logos, then go ahead and indulge. Jul 93

★★★★ **Working Model 1.0, Knowledge Revolution, 415/553-8153, $995.** Animators and engineers will love this terrific motion simulator that mimics real motion by applying physical laws to objects. It's easy to learn and use, but you'll need some understanding of math and physics. Oct 93

## PROGRAMMING

★★★ **CLImate 1.0, Orchard Software, 617/876-4608, $59.95.** With a little more documentation and a few more sample programs, this utility that provides a subset of Unix-like commands for the Mac environment could be an irresistable package. Oct 93

★★★★ **FutureBASIC 1.0 (1.02), Zedcor, 602/881-8101, $299.95.** Complete, easy-to-learn, real-world programming tool has full Toolbox, System 7, and assembler support. It's a wonderful tool that's rapidly becoming a favorite among commercial developers. Jul 93

★★★ **Macintosh Common Lisp 2.0 (2.0.1), APDA, 716/871-6555, $495.** Anyone who likes programming in LISP will be pleased with the environment provided by this version of the standard dialect and its extensive debugging and interface-building facilities. Oct 93

★★★★ **Object Master for Think C and C++, ACI US, 408/252-4444, $255.** Object-oriented development environment is full of goodies and will pay for itself in about a week due to increased programmer productivity. Apr 94

★★★★ **PG:Pro 1.5 (2.1), Staz Software, 601/255-7085, $169.** For part-time or novice programmers, the combination of these BASIC programming tools and FutureBASIC is a fast path to a working program. Jul 93

★★★ **PowerPacks 2.0, NDG Phoenix, 301/718-8880, $225.** Programmers' tool kit for 4th Dimension provides 280 external procedures to improve custom applications and exploit System 7 features. Don't expect any quick fixes for 4D's less-than-blistering performance in most areas, though. Oct 93

★★★★ **Smalltalk/V for Macintosh 2.0, Digitalk, 714/513-3000, $495.** Object-oriented development system is now even more viable for commercial projects, while Digitalk's customer support and documentation set a standard other vendors should emulate. Feb 94

★★★ **SoftPolish 1.1, Language Systems Corp., 703/478-0181, $295.** Program-quality-assurance utility systematically checks the resources in a program's interface against a huge laundry list of errors. It's a programming tool for anyone who hopes to produce a commercial Mac application. Sep 93

★★★ **SourceSafe 2.1, One Tree Software, 919/821-2300, $295 to $1195.** Solid, relatively easy-to-use product handles program-development administrative tasks, including version control, for multiplatform programs being created by groups. Sep 93

★★★★ **Symantec C++ for Macintosh 6.0, Symantec Corp., 408/253-9600, $499.** If you like Think C, you'll like this software-development system, too. For the Mac, it's an excellent opportunity to catch a new wave in programming. Nov 93

★★★ **VIP BASIC 1.0.1, Mainstay, 805/484-9400, $295.** Popular programming language lets programmers who know only BASIC get started producing real, if interpreted, Mac programs. It's a serious developer's tool, though it's not on the same footing as VIP-C. Jun 94

★★★★ **VIP-C 1.0.1, Mainstay, 805/484-9400, $495.** If you've mastered the rudiments of C, this programming-code generator will let you code about ten times faster than you could using only an editor. Its real strength is in rapidly assembling smaller projects. May 94

## UTILITIES

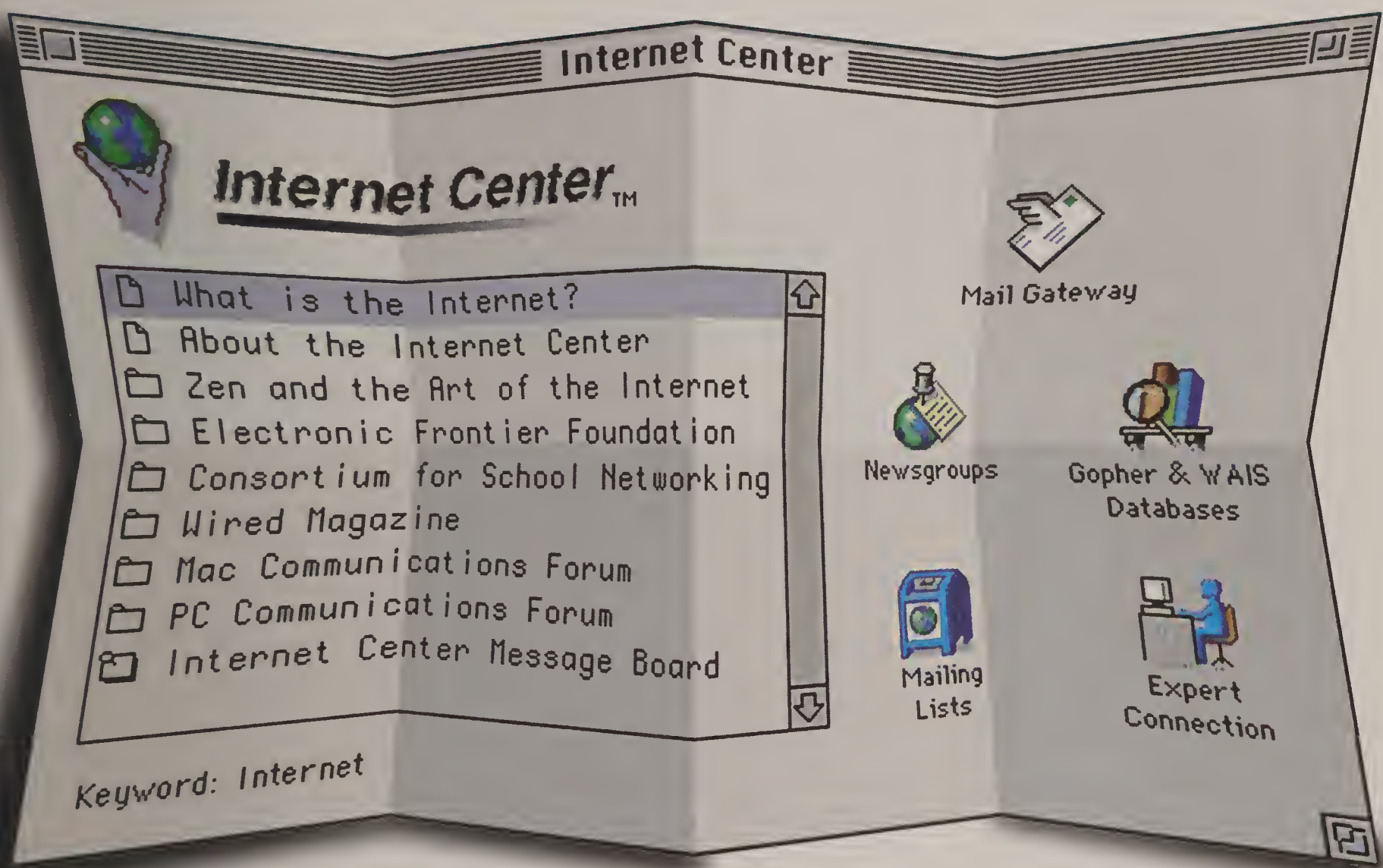
★★★ **AppleSearch 1.0, Apple Computer, 408/996-1010, $1799.** Although it has some rough edges, this product for archiving and retrieving text is highly useful. It presents retrieved information clearly and extracts text from documents in many formats. May 94

★★★ **Atticus Vista 1.0, Atticus Software Corp., 203/348-6100, $69.95.** Control panel and application automatically catalog the disks you mount on the desktop. It has a few problems, including limited search options, but it can help bring order to disorganized disk collections. May 94

★★★★ **Automap Road Atlas for Macintosh 2.01 (2.04), Automap, 206/455-3552, $99.95.** Software tells you how to get where you're going better than any other map, atlas, or software our reviewer has seen. Although screen redraw is slow, it's worth it for the written directions and maps the program has to offer. Jul 94

★★★★ **CD-ROM ToolKit 1.0.5, FWB, 415/474-8055, $79.** Software accelerator can halve the time it takes to open files and search on a CD-ROM. The product supports a wide variety of formats and CD-ROM drives,

# Your Road Map For The Information Superhighway—America Online®

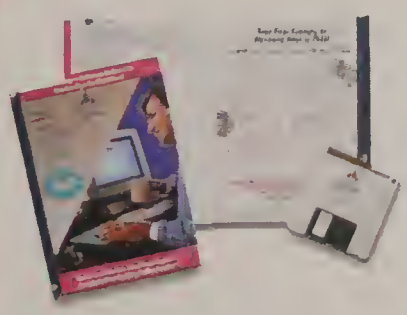



America Online Introduces The Easiest Way To Reach The Internet

AMERICA Online

## Yes! I'd like to try America Online—FREE.

Send me the free software and trial membership. I understand there's no risk—if I'm not completely satisfied, I may cancel without further obligation.



NAME

ADDRESS

CITY

STATE ZIP

( )
HOME PHONE

SELECT DISK TYPE AND SIZE —

Windows*: ❑ 5.25 ❑ 3.5

DOS: ❑ 5.25 ❑ 3.5 ❑ High Density ❑ Low Density

Apple®: ❑ Macintosh®3.5

*To use America Online for Windows, you must have a 386 PC or higher, 4MB of RAM, a VGA monitor, a mouse, a modem, and a working copy of Windows 3.1.

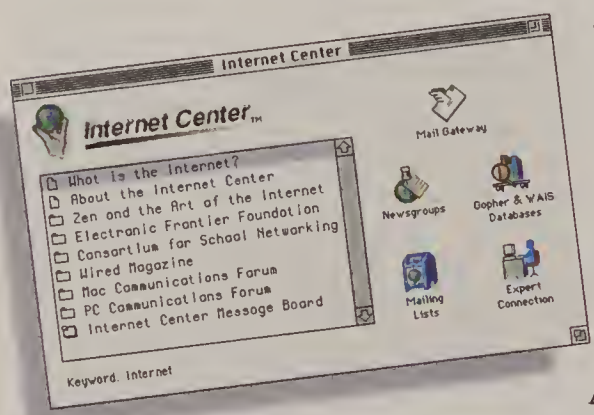
Use of America Online requires a major credit card or checking account. Limit one free trial per household. America Online is a registered service mark of America Online, Inc. Other names are service marks or trademarks of their respective owners.

0980/W

# Test Drive The Internet On America Online For 10 Hours, FREE.

## *The Internet Center, An America Online Exclusive!*

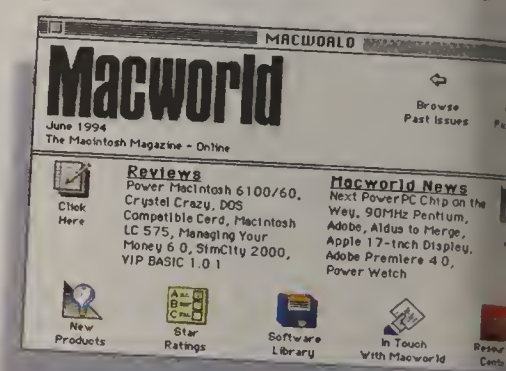
Before you can exchange ideas with people around the world, you have to learn your way around the information superhighway. No problem. Just go to our Internet Center—your road map to the Internet. You'll find we've made it as easy to handle as America Online.



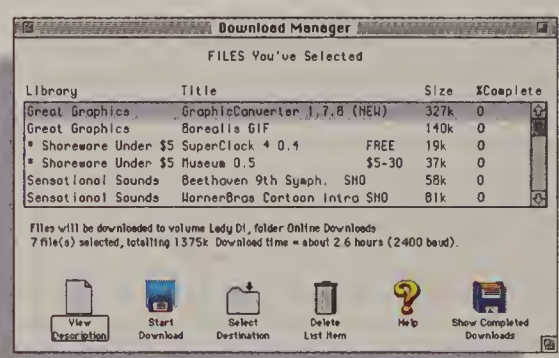

With a point and click, you can access newsgroups on hundreds of topics, send e-mail to other online services or overseas, access information on everything from home brewing to NASA news using Gopher and WAIS databases—and more. Best of all, on America Online, you can navigate the Internet without worrying about message counts, block counts, or surcharges—it's all at no extra charge!

## *Featuring Macworld® Online.*

In addition to the Internet, you can access the electron version of **MacWorld** magazine. Learn about upcoming articles and events before the next issue hits the newsstands. Share your opinions and questions with the editors and receive answers. Download software they recommend.




Plus, check out America Online's software libraries with over 100,000 files to download. Multi-file downloading a 9600 baud modem access make it fast and easy. You can join online clubs for your favorite hobbies. You can eve talk with other members in conversations, conferences, a classes. All on the most "clic" able" online service there is.




## *Start Your Test Drive Today*

So hit the information superhi way and head for America Onlin It's easy. Just mail the attached ca or fax it to us at 1-800-827-4595 Or simply call 1-800-827-6364, Ext. 0980, to order today!

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 9096 VIENNA, VA

POSTAGE WILL BE PAID BY ADDRESSEE

AMERICA Online

8619 Westwood Center Drive
Vienna, VA 22182-9806

AMERICA Online

1-800-827-6364, Ext. 09

but users should be aware that playback of QuickTime movies is often uneven. May 94

★★★ **Chameleon 2.0.3 (2.1), Logical Solutions, 612/659-2495, $59.95.** Sleek desktop-pattern editor comes with an ample supply of rich, textured color images and a set of limited but functional editing tools. Sep 93

★★★★ **ClickChange 2.0, Dubl-Click Software, 818/888-2068, $89.95.** Interface-customizing package has nothing you need but is filled with everything you want, including tools that let you alter major elements of the Mac's look and feel. Aug 93

★★★ **Connectix Desktop Utilities 1.0 (1.0.1), Connectix Corp., 415/571-5100, $99.** Although some of the 16 utilities offered in this package are more at home on a PowerBook, this collection offers one-stop shopping at a low price. It's worth it for the file-synchronization, Keyboard Power, and Hot Keys features alone. Nov 93

★★★★ **CopyDoubler 2.0 (2.0.1), Symantec/Fifth Generation Systems, 504/291-7221, $59.** This utility speeds up copying, lets you queue jobs for background copying, and offers a variety of other useful, copying-oriented features—all at a very reasonable price. Nov 93

★★★ **Copyright Pro 1.0.3, CSG Technologies, 412/471-7170, $79.** Utility takes over the Finder's copying function, copies in the background, and allows you to regularly schedule copying. It doesn't speed up copying, however. Nov 93

★★★★ **CPU 2.0 (2.0.1), Connectix Corp., 415/571-5100, $99.** Reasonably priced collection of utilities for the PowerBook adds new features, including file synchronization, that easily justify the upgrade price. Sep 93

★★★ **CryptoMactic 1.0.1, Kent Marsh, 713/522-5625, $99.** Security software offers fast Finder-level encryption and decryption with effective file removal. Although its simplest encryption algorithm isn't quite hacker-proof, it's worth considering. Feb 94

★★★★ **DiskLock PB 1.0, Symantec/Fifth Generation Systems, 504/291-7221, $59.** PowerBook security software balances robust security with simplicity and ease of use. It's much harder to crack than most PowerBook utility collections' security features, and will keep out all but the most determined. Jan 94

★★★★ **DiskTop 4.5, PrairieSoft, 515/225-3720, $99.95.** Organizing a crammed hard drive is a more manageable task with this simple but powerful file-management utility that lets you copy, move, rename, delete, and find files—without using the Finder. Jul 94

★★★ **The Disney Collection Screen Saver, Berkeley Systems, 510/540-5535, $49.95.** Mickey, Goofy, Peter Pan, Ariel, and other Disney favorites cavort around your screen with this screen saver that includes 16 different modules. Mar 94

★★★ **DriveShare 1.03, Casa Blanca Works, 415/461-2227, $129.95.** This utility allows users to share a removable drive over a network. It's most useful if your network consists of both System 6 and System 7 users, as its advantages over System 7 file sharing are slight. Nov 93

★ **DriveTech 1.0, MicroMat Computer Systems, 415/898-6227, $59.95.** Without decent documentation or clearer error messages, this floppy-drive cleaning and diagnostic program is essentially a $60 floppy-drive cleaning kit. Since you can buy a cleaning kit without software for $10, that makes it a bad deal. Jan 94

★★★ **DupLocator 1.03, Midnight Software, 303/933-1013, $99.** For new Macintosh users who don't have a general file utility, this software that locates duplicate files, as well as performs basic file commands such as moving and renaming files, may be useful. Jan 94

★ **eDisk 1.0 (1.2), Alysis Software Corp., 415/566-2263, $149.95.** Driver-level compression software has little to recommend it over file-level, idle-time compression programs. The biggest drawback is the strong potential for disk or file corruption. Oct 93

★★★ **Freedom of Press Classic, ColorAge, 508/667-8585, $149.** Utility allows you to print PostScript graphics on almost any non-PostScript printer—easily and with impressive results. Mar 94

★★★ **Icon 7, Inline Software, 203/435-4995, $79.95.** Simple, straightforward utility has a streamlined and intuitive library feature for storing and retrieving icons, plus tools for icon editing. Its icon collection, however, is pretty paltry. Sep 93

★★★ **Icon-It Pro 3.0.6, Olduvai Corp., 305/670-1112, $129.** Utility allows you to attach custom tool bars to almost any application, including the Finder. The interface is quirky, but you get used to it. Dec 93

★★★ **I Like Icon 1.0, Baseline Publishing, 901/682-9676, $59.95.** Glitzy utility has tools for icon editing, has a nice library of icons, and can create animated icons. Some basic features, such as a text tool, are missing, and the animated icons are fun but impractical. Sep 93

★★★ **MacPak 1.0, Symantec/Fifth Generation Systems, 504/291-7221, $149.** The quality of this utility collection is uneven—some modules are unpolished—but if you don't already own AutoDoubler, CopyDoubler, and a good file-management program, it's worth the price. Jan 94

★★★★ **MacTools 3.0, Central Point Software, 503/690-8090, $149.** Recovering trashed files is a snap with this utility package that fixes more disk problems than its competition. It includes disk-and-file maintenance, disk repair, virus protection, and backup. Mar 94

★★ **Magic Typist 2.0, Olduvai Corp., 305/670-1112, $129.** If you want to speed up typing of repetitive phrases or if you don't have full use of your hands, this utility, which automates typing of repetitive phrases, may be useful, but some functions work erratically or not at all in Microsoft Word. Sep 93

★★★★ **Mr. File 2.0, Softways, 408/978-9167, $99.** The well-designed background capabilities of this Finder utility make it a handy tool for copying, finding, moving, launching, and renaming files, although it has a few interface quirks. Dec 93

★★★ **Now Compress 1.0 (1.0.1), Now Software, 503/274-2899, $69.** Compression utility holds its own in a crowded market; it's easy to use, it's complete, and it compresses as well as or better than other options. Dec 93

★★★ **Now Fun, Now Software, 503/274-2899, $45.** Five control panels let you liven up your Mac by customizing everything from menu colors to system sounds. The included screen-saver modules and desktop patterns and pictures are fairly limited, though. Dec 93

★★★★ **Now Utilities 4.0.1 (4.0.2), Now Software, 503/274-2899, $129.** Many thoughtful improvements have been added to this collection of utilities, which is now better integrated, more logically designed, and still an excellent deal for your dollar. The new scrapbook feature, however, is awkward and inconvenient. Aug 93

★★★ **Open Sesame 1.02, Charles River Analytics, 617/491-3474, $99.** Utility automates Finder operations, such as opening and closing files, without resorting to macros or scripts. It has an elegant interface, but people with strict work habits are more likely to find its suggestions worthwhile than are those who don't follow a routine. May 94

★★★ **OptiMem 1.4.1, Jump Development Group, 412/681-2692, $129.** Systemwide memory manager monitors RAM use and allocates RAM where it's needed. Works best with software that handles minimum-memory situations effectively. Mar 94

★★★ **Power To Go 2.0, Claris Corp., 408/727-8227, $99.** PowerBook utility collection has a few unique slants—including a floating palette that can display battery-life estimates—that keep it above the also-rans. It does lack features of similar products. Dec 93

★★★★ **QuicKeys 3.0, CE Software, 515/221-1801, $169.** The simple, unintimidating interface of this macro-building utility allows you to build a set of useful shortcuts quickly. Mar 94

★★★★ **RAM Doubler 1.0.1, Connectix Corp., 415/571-5100, $99.** Inexpensive system extension doubles available RAM for many Mac users. There are a number of requirements, however, including System 7, 4MB of physical RAM, and a 68030 board. May 94

★★★ **Redux Deluxe 2.0.2 (2.5), Inline Software, 203/435-4995, $79.95.** Easy to learn and relatively simple to use, this backup program has some powerful features, such as scripting, but it doesn't have a compression option. Jan 94

★★★★ **Retrospect 2.0, Dantz Development Corp., 510/253-3000, $249.** Powerful backup and archiving software has an improved interface and scripting capabilities, and works well for all levels of users. Sep 93

★★★★ **Retrospect Remote 2.0, Dantz Development Corp., 510/253-3000, $449.** Utility allows fast, automatic backup of networked Macs to a central Mac with a backup device. It worked flawlessly in our reviewer's tests. Sep 93

★★ **SafeDeposit 1.2, Dayna Communications, 801/269-7200, $189.** Automated backup program is easy to set up but slow. Also, unattended backups must be restarted from scratch if disk space runs short and a new disk isn't inserted. Sep 93

★★ **Safe or Sorry 1.0, Olduvai Corp., 305/670-1112, $59.** Unobtrusive control panel periodically saves all of your keystrokes, but requires System 7.1 and offers no clear-cut advantages when compared with other text-recovery programs. Oct 93

★★★★ **SAM 3.5.8, Symantec Corp., 408/253-9600, $99.** Efficient, thorough virus-protection software slows down system start-up and application launching, but this program is a worthwhile investment for anyone who exchanges or downloads files. Mar 94

★★★★ **Screenscapes 1.0.1, Kiwi Software, 805/685-4031, $44.95.** With more than 600 desktop patterns—and a suite of well-designed modules to transform those patterns—this fun and frivolous utility lifts desktop-pattern design to new heights of elegance. Nov 93

★★★ **Square One 1.5.2, Binary Software, 310/582-8293, $74.** Flexible, attractive icon-based file launcher provides infinitely customizable palettes, including one that displays active applications. The application will consume 400K of your system memory. Aug 93

★★ **Stacker for the Macintosh 1.0.1, Stac, the Data Compression Company, 619/431-7474, $149.** As long as you pay attention to the capacity of your hard drive, this driver-level compression product performs reasonably well, except for its slow hard drive read quotient. Oct 93

★★★★ **Star Wars Visual Clips, Sound Source Unlimited, 805/494-9996, $89.95.** Control panel lets you play QuickTime movie clips from *Star Wars* at system events. If you have the money, the hard drive space, and the RAM, this is the kind of totally cool toy that will

*continues*

# Star Ratings

make you remember why you love your Mac. Sep 93

★★★ **Tempo II Plus 3.0.9, Affinity Microsystems, 303/442-4840, $179.95.** Very capable macro-creating utility may be daunting for novices but offers plenty of power for advanced users. Mar 94

★★★★ **TimesTwo 2.0, Golden Triangle Computers, 619/587-0110, $149.** This driver-level compression utility is transparent and robust. It caused no problems through a two-month course of testing, on a system with myriad utilities and system software tools. Mar 94

★★★★ **Toner Tuner 1.0.3, Working Software, 408/423-5696, $24.95.** Inexpensive, incredibly useful extension adds a sliding bar to print dialog boxes allowing you to adjust the amount of toner applied to each print job. If you can't save trees, you can at least save toner. Dec 93

★★★★ **ultraShield 1.252 (1.3), usrEZ Software, 714/756-5140, $149.** Sophisticated security product combines practically every feature you might need into an integrated package, including a lightning-fast version of the U.S. government data-encryption standard. Dec 93

★★★ **UnderWare 1.0.1, Bit Jugglers, 415/968-3908, $59.95.** Inspired, silly fun for your Mac's desktop comes from a control panel that adds three features: a screen saver, desktop patterns, and animations that run on your desktop while you work. The price for this whimsy is mostly in disk space. Jun 94

★★★★ **Virex 5.0, Datawatch Corp., 919/549-0711, $99.95.** The extremely fast, trouble-free performance of this software makes the task of guarding against computer viruses almost painless. Its speed puts it ahead of the pack. May 94

★★★ **Virtual 3.0.1, Connectix Corp., 415/571-5100, $99.** If you need to eke out as much virtual memory speed as possible, this utility may be a useful tool. For System 6 users who want virtual memory, it's the only game in town. Sep 93

★★★★ **VirtualDisk 1.1a, Continuum Software, 206/695-8136, $69.** Rapid disk cataloging; fast, efficient label-printing; and an excellent disk-copy utility make this software package a wonderful value. Jul 94

★★★ **Working Watermarker 1.02, Working Software, 408/423-5696, $49.95.** Simple, useful system extension allows you to print or fax text and/or graphics "watermarks" in the background of virtually any document. Although it has imperfections, it's earned a permanent spot in our reviewer's System Folder. Jan 94

### VERTICAL MARKETS

★★★★ **Claire, The Personal Music Coach 1.0.1, Opcode Systems, 415/856-3333, $129.95.** Musicianship program teaches pitch and interval recognition, sight singing, and intonation. Although the interface is nonstandard, it's logical and easy to learn. May 94

★★★★ **Finale 3.0.1, Coda Music Technology, 800/843-2066, $749.** Upgraded music-notation software is now infinitely more pleasant to use. Its comprehensive feature set makes it the standard against which all other music-notation products must be judged. Dec 93

★★ **MacInteriors, Microspot, 408/253-2000, $129.** Correctly placing objects is unduly cumbersome in this interior-design software, but once you catch on to the program's quirks, it's useful. Feb 94

★★★★ **Musicshop 1.0, Opcode Systems, 415/856-3333, $149.95.** MIDI sequencer is an excellent choice as a first sequencer. It's powerful enough to satisfy the needs of most MIDI users. Oct 93

★★★ **Roll Call 2.0 (2.5.6 or 3.0), By the Numbers, 603/927-4508, $495 to $595.** 4th Dimension database application for church management helps track donations, attendance, church-group membership, and visitation. While not a complete church-management system, it's an acceptable complement to a general accounting program. Aug 93

★★★ **Sailing Master 1.1, Starboard Software, 313/662-4393, $64.99.** Though the slow speed and jerky motion point to less-than-polished programming, this sailboat-racing simulation offers good tactical play and is fun—well worth the price for sailing competitors. Nov 93

★★★★ **WillMaker 5.0, Nolo Press, 510/549-1976, $69.95.** Legal software quickly and easily automates the creation of wills, health-care directives and proxies, and final-arrangements documents. It offers excellent supporting explanations, examples, and background. Jun 94

### WRITING TOOLS

★★★★ **MacWrite Pro 1.5, Claris Corp., 408/727-8227, $249.** The clean, uncluttered interface of this low- to middle-level word processor is still one of its major assets. This upgrade adds support for QuickTime, PowerTalk, AppleScript, and more. May 94

★★ **MasterWord 5.1, Alki Software Corp., 206/286-2600, $99.95.** The centerpiece of this package of add-on Microsoft Word commands is a set of customizable tool bars. Unfortunately, rough edges remain, including inaccuracies in the documentation and some features that don't work as advertised. Aug 93

★ **The Oxford English Dictionary, Oxford University Press, Electronic Publishing, 212/679-7300 ext.7370, $895.** CD-ROM dictionary contains 20 print volumes, including half a million words, but the flaws, omissions, unreliability and unforgivably poor design are unbearable. Apr 94

★★★ **Random House Unabridged Dictionary, Random House Electronic Publishing, 212/572-2600, $179.** The most comprehensive American-made dictionary on CD-ROM works within any program and is good at guessing misspelled words. Although some functions don't work reliably, the quality and design of the software are better than those of other dictionaries on CD-ROM. May 94

★★★ **Spelling Coach Professional 4.0.1, Deneba Software, 305/596-5644, $195.** If you're considering investing in reference software, this spelling checker, dictionary, and thesaurus is a relatively capable, if expensive, alternative. Oct 93

★★★★ **Thunder 7 1.5.3, Baseline Publishing, 901/682-9676, $99.95.** Stand-alone spelling checker and thesaurus interactively monitors your keystrokes and alerts you to potential errors as they are entered. It quickly and transparently prevents you from making embarrassing typos. Nov 93

★★★★ **WordPerfect for Macintosh 3.0, WordPerfect Corp., 801/225-5000, $495.** The innovative interface of this word processor uses context-sensitive button bars and expandable rulers to make innumerable features accessible with a click of the mouse. It's an accomplishment in ease of use. Mar 94

★★★★ **WriteNow 4.0.1, WordStar International, 415/382-8000, $119.95.** Tidy word processor's conservative use of memory (the application fits into a dainty 600K partition) and graceful interface will continue to win it enthusiastic fans. This version adds elegant table capabilities and several PowerBook-friendly features. Jun 94

★★★ **A Zillion Kajillion Rhymes 1.0, Eccentric Software, 206/628-2687, $49.95.** Rhyming dictionary is quick, small, simple, and self-contained; but it only rhymes with the roots of search words (and ignores *-ed*, *-s*, and *-ing* endings). Nov 93

## Hardware

### INPUT DEVICES

★★ **Apple Adjustable Keyboard, Apple Computer, 408/996-1010, $219.** Keyboard is only a slight improvement on the flat slab keyboard. Theoretically, it corrects ulnar deviation, but many sufferers of repetitive stress injuries want a keyboard that adjusts vertically. Jul 93

★★★★ **ArtZ ADB Tablet, Wacom Technology Corp., 206/750-8882, $449.** Combining pressure-sensitive operation, manageable size, and a new pencil-thin stylus, this affordable digitizing tablet is perfect for artists looking for traditional-style control of their graphics programs. Aug 93

★★★ **Computer Crayon, Appoint, 510/463-3003, $49.** The kid contingent's verdict was a definite thumbs-up on this brightly colored input device that's shaped like a thick pencil. The buttons can be hard for smaller children to press, and serious computer artists should still opt for a drawing tablet. Oct 93

★★★ **DrawingSlate, CalComp Digitizer Division, 714/821-2000, $395.** Digitizing tablet is a good, compact, low-cost implementation of pressure sensitivity, although the battery-operated stylus is a bit heavy. Jun 94

★★ **Gulliver, Appoint, 510/463-3003, $119.** This diminutive mouse is hard to hold comfortably for an extended period, but it works well on almost any surface and is an acceptable option for PowerBook users. Oct 93

★★★ **PenDirect ADB, FTG Data Systems, 714/995-3900, $498.** Input device lets you manipulate items on the Macintosh screen using a special stylus called a light pen. It works well, although it seems ergonomically inferior to a mouse for routine tasks. Mar 94

★★★ **TrakMate, Key Tronic Corp., 509/928-8000, $149.** Input device integrates a trackball into a wrist pad. While the design is interesting, it's not for everyone. Feb 94

★★★ **Wacom UD-1212R, Wacom Technology Corp., 206/750-8882, $749.** Graphics tablet with pressure-sensitive stylus is easy to use and highly customizable, though it's incompatible with AppleTalk and AppleTalk Remote. May 94

### MISCELLANEOUS HARDWARE

★★ **AC5100, Altec Lansing Consumer Products, 717/296-2818, $180.** Lightweight powered speakers don't sound as good as they should. There's too much emphasis on the high end at the expense of the midrange, and they hiss noticeably. Dec 93

★★ **AC5150, Altec Lansing Consumer Products, 717/296-2818, $150.** Subwoofer rounds out the sharp tones of the ACS100, but the bass response is neither punchy enough nor loud enough, and the unit is about the size and weight of a concrete block. Dec 93

★★★ **AppleDesign Powered Speakers, Apple Computer, 408/996-1010, $179.** Tall and curvy powered speaker set looks and sounds good and can produce uncomfortably high volumes without noticeable distortion, but the bare-wire-and-terminal connections aren't user-friendly. Dec 93

★★★ **Apple Newton MessagePad, Apple**

**Computer, 408/996-1010, $699.** Although Apple released this personal digital assistant too early and marketing hype led to mistaken expectations, this is a very intelligent piece of work with an impressive variety of serious business uses. Dec 93

★★★ **Apple PowerCD, Apple Computer, 408/996-1010, $400.** This extremely versatile and beautifully designed portable CD-ROM drive offers impressive audio and Photo CD features, but if you're a serious CD-ROM user, it's too slow to satisfy. Jan 94

★★★ **Ear Phone Streamline AV, Jabra Corp., 619/622-0764, $169.** As a hands-free telephony tool—and as a replacement for the Apple PlainTalk microphone—this telephone/speech-recognition earpiece is a winner. Its biggest drawback is that you can't hear other Mac sounds, such as modem tones, when it's plugged in. Jul 94

★★★ **EMBARC, Embarc Communications Services, 407/364-2000, $395 plus fees.** If you're a PowerBook user who is frequently in places with no telephone and you need timely delivery of electronic news and E-mail, this portable wireless message service may prove useful, but the cost may be prohibitive to others. Sep 93

★★ **G-Vox, Lyrrus, 215/922-0880, $399.** Hardware-software guitar-instruction package lets your Mac "hear" the notes you play on your guitar. Although the hardware works well, the software has some basic problems and doesn't live up to the hardware. Apr 94

★★★ **Hello Music, Yamaha Corp. of America, 714/522-9240, $449.** MIDI starter kit includes an impressive tone generator that's compatible with General MIDI Level 1 and Roland MT-32, but the included software is functional at best. Dec 93

★★ **Macintosh TV, Apple Computer, 408/996-1010, $2079.** As a computer, this combination computer-television-CD player is sleek but slow. You can get faster performance and better expandability from several less-expensive Performa models. Apr 94

★★★ **PowerLink Presentor, E-Machines, 503/646-6699, $499.** Simple, compact Duo dock wobbles a bit when plugged in but provides fine support for a variety of displays, plus ports for ADB, floppy drive, and sound output. Nov 93

★★★ **PowerPlate, Technöggin, 513/321-1777, $169.95 to $299.95.** Line of long-lived, external PowerBook battery packs, each of which enables you to work for three to five times as long as the usual PowerBook battery. Unfortunately, the System 7 power manager periodically alerts you that your battery is not charging and dims the screen though battery pack has hours of time left. Mar 94

★★★ **RCD-202, Pinnacle Micro, 714/727-3300, $3995.** Writable CD-ROM drive is good for archiving data simply and inexpensively, but it's incompatible with many hard drives. Mar 94

★★★★ **ThinPack, VST Power Systems, 508/287-4600, $199.95.** External battery pack for PowerBooks is compact, with a lightweight design. It comes with handy power-management utilities. Mar 94

★★★★ **TurboDialer, Advanced Software, 408/733-0745, $79.95.** Automatic telephone dialer is a well-executed product, except for occasional computer noise that seeps into phone conversations. If you constantly dial phone numbers that are stored in your computer, this product will save you time and energy. Jul 94

★★★★ **Yamaha YST-M10 Powered Monitor Speakers, Yamaha, 714/522-9240, $149.95.** Powered speakers have a good balanced sound and a great volume range at an outstanding price. Apr 94

## MODEMS/NETWORK HARDWARE

★★★★ **AsantéHub 1012, Asanté Technologies, 408/435-8388, $1299.** This 12-port, 10BaseT Ethernet hub works right out of the box and is a premium device at a bargain price. Dec 93

★★★★ **Cypress PhonePro 1.2, Cypress Research Corp., 408/752-2700, $349 to $950.** By improving its integration with FaxPro and with PowerTalk and PowerShare, this powerful telephony software has greatly extended its business scope. May 94

★★★ **DataLink PB; Axcell Cellular Interface, Applied Engineering, 214/241-6060, $824.** If you need a full-blown office on the beach, this PowerBook cellular-modem package with automatic answering machine is a well-executed solution. Each recorded second requires 25K of disk space. Nov 93

★★★★★ **EtherWave, Farallon Computing, 510/814-5000, $129.** If you need to expand your network at a reasonable price with minimal fuss, get this Ethernet transceiver. Instead of providing only one 10BaseT twisted-pair jack, it includes a second jack that allows you to daisy-chain to another device through an additional 10BaseT line. May 94

★★★ **PerFit Port-A-Com, PerFit, 303/530-7333, $349.** Compact, ADB-powered, high-speed fax/data modem is difficult to configure, due to its Spartan and poorly organized documentation, but is still a solid product at a reasonable price. Nov 93

★★★ **SupraFaxModem 144PB, Supra Corp., 503/967-2400, $349.95.** If you're looking for a high-speed internal modem for your PowerBook, and you want to save a few bucks, this modem is worth considering. Disabling its fax software solved occasional transfer problems. Nov 93

★★★ **Watermark Message Central 2.0.2, High Tide Software, 510/704-9927, $499.** If you're willing to put in a lot of effort, you'll find this highly sophisticated voice-mail system supremely flexible. It includes a specially modified modem with voice chip, as well as fax software and telecommunications software. Jul 94

## PRINTERS

★★ **Address Express, CoStar Corp., 203/661-9700, $499.** Flaky performance and system crashes plagued this envelope-and-label printer in our tests, but the print quality was good. Oct 93

★★★ **Apple Color Printer, Apple Computer, 408/996-1010, $2349.** If you need large-format color output, but not precision color-matching, this well-built printer is a reasonable choice, although it doesn't support PostScript. Aug 93

★★★★ **Apple Portable StyleWriter, Apple Computer, 408/996-1010, $439.** Sleek, portable ink-jet printer weighs 4½ pounds and is a pleasure to use. It uses standard StyleWriter cartridges. Jan 94

★★ **Brother HJ-400, Brother International, 908/356-8880, $369.** Compact, 360-dpi ink-jet printer is fairly slow and does not allow background printing. Some large files require additional application memory to print correctly. May 94

★★★★ **DeskWriter 310, Hewlett-Packard, 800/752-0900, $379 to $455.** Versatile, low-cost ink-jet printer is a 4.3-pound, battery-powered portable. With its 60-page sheet feeder, it's also a great desktop printer; and with a $49 color print cartridge, it offers inexpensive three-color printing. Mar 94

★★★ **HP LaserJet 4ML, Hewlett-Packard, 800/752-0900, $1279.** Primarily for those of you who use a PC or work in a small, mixed-platform environment, this energy-efficient laser printer offers automatic port and language switching, and is a good buy. Its advanced PC features may not be worthwhile for those who use Macs only. May 94

★★★★ **LaserWriter Select 300, Apple Computer, 408/996-1010, $839.** Inexpensive, low-capacity printer is networkable, and an excellent buy, despite a few weaknesses. Add a 4MB SIMM to take advantage of the amazing PhotoGrade capabilities, which allow the printer to generate 91 shades of gray. Aug 93

★★ **LaserWriter Select 310, Apple Computer, 408/996-1010, $1099.** This big, slow printer is a true Adobe PostScript printer with both Mac and DOS ports, but it's not networkable or compatible with the Communications Toolbox, it can't automatically switch ports, and it doesn't have adjustable paper guides. Aug 93

★★★★★ **LaserWriter Select 360, Apple Computer, 408/996-1010, $1599.** Low-cost, high-performance, 10 ppm printer is perfect for small LocalTalk or mixed networks. For bigger networks, consider buying more than one; they're more cost-effective than a 20-ppm printer. Apr 94

★★★ **microLaser Pro 600, Texas Instruments, 800/848-3927, $2148.** Overall, this workgroup printer is fast and provides good print quality. The price is steeper than that of other products, but if you work in a busy office where a really fast printer makes everybody's life easier, the higher price may be worth it. Jul 94

★★★ **MobileWriterPS, Mannesmann Tally Corp., 206/251-5524, $999.** Fast, portable printer is currently the only PostScript portable available. While the print quality is quite good on glossy laser paper, it's mediocre on inexpensive bond. Dec 93

★★ **Notebook Printer II, Citizen America, 310/453-0614, $399.** If weight and size are your biggest concerns in choosing a portable printer, and you print primarily in black and white, this thermal-fusion printer may be a good choice. If speed is at all an issue, however, other options may be preferable. Jun 94

★★★★ **Personal LaserWriter 320, Apple Computer, 408/996-1010, $959.** If you've been holding out for a high-quality personal laser printer that's fast enough to share over LocalTalk, the small inconveniences of this 300-dpi printer are easily outweighed by its low price, good speed, and PostScript Level 2 support. May 94

★★★ **Phaser 200i Color Printer, Tektronix, 503/682-7377, $5995.** This thermal-wax color printer is fast and compact, with versatile paper-handling features. TekColor image-enhancement technologies provide excellent output quality that is, however, poor on letterhead and inexpensive photocopier bond. Aug 93

★★ **PrintPartner 10W, Fujitsu Computer Products, 408/432-6333, $2450.** While this multiplatform printer is fast and prints clearly, many Mac users will find it frustrating as it can't print some TrueType fonts. Jul 93

★★ **QMS ColorScript Laser 1000, QMS, 205/633-4300, $9999.** Color laser printer succeeds in combining the versatility of monochrome laser printing with attention-getting color, but if you don't need to chase rainbows right away, you might wait and see if competition drives prices down and capabilities up. Jul 94

★★★ **Silentwriter 640, NEC Technologies, 508/264-8000, $800.** With 3MB of RAM, PostScript Level 2 support, and a 6-ppm engine, this printer is a capable performer. Generally, it represents hassle-free printing, but it doesn't handle single sheets of paper well. Jun 94

*continues*

# Star Ratings

★★★ **Smart Label Printer Pro, Seiko Instruments, 408/922-5900, $299.95.** If you need to print only a few labels at a time, this label printer may be an expensive but good choice. It prints very quickly, and with excellent print quality. May 94

## SCANNERS

★★★★ **Apple Color One5canner, Apple Computer, 408/996-1010, $1349.** Tests of this color scanner demonstrate unpolluted colors and sharp image details, perhaps due to color filters and lenses that Apple claims were designed and tuned for the scanner. Jul 93

★★★★ **Coolscan L5-10e, Nikon Electronic Imaging, 516/547-4200, $2600.** Compact desktop scanner for digitizing images from 35mm transparencies is slow, but delivers images good enough for newsprint publications and some catalogs. Dec 93

★★★★ **Epson E5-800C, Epson America, 310/782-0770, $1499; Macintosh interface kit $399.** Flexible 400-dpi scanner offers a range of options, including one- or three-pass scanning, plus a full-featured, easy-to-use software package. Aug 93

★★★★ **IX-4015 Color Image 5canner, Canon Computer 5ystems, 714/438-3000, $1169.** The price of this color flatbed scanner is competitive, and its speed and excellent bundled software make it easy to use and a good choice for the small office. If you can get by without legal-size scans, it should serve you well. Jul 94

★★★ **LightningScan Portable, Thunderware, 510/254-6581, $459.** PowerBook owners will find this hand scanner's modem- or serial-port connection, lightweight interface, and total portability well worth the cost, although the scanner is incompatible with some desktop Macs. Dec 93

★★★★ **Mirror 800 Plus Color Scanner, Mirror Technologies, 612/633-4450, $1299.** Add the NuBus JPEG board ($300) and easy-to-use 35mm transparency scanning module ($599) and you get a nifty—if slow—desktop scanning package for a reasonable price. Jan 94

★★★ **5canMaker 35t, Microtek, 213/321-2121, $1999.** Speedy 35mm film scanner accommodates loose film and delivers a good image, but the included software is weak. Dec 93

★★★ **5canPlus Color 6000 for Mac, PlusTek U5A, 408/980-1234, $749.** Small, inexpensive sheetfed color scanner is not appropriate if exact color matching is critical, but it is otherwise a good, economical option. Sep 93

## SYSTEMS/STORAGE

★★★★ **DataPak 105, Mass Microsystems, 408/522-1200, $949 to $1049.** Well-built 105MB SyQuest drive comes with a decent, no-frills cartridge-formatting package and a copy of 7th Heaven. The preformatted cartridges have a lifetime warranty. Sep 93

★★★ **EtherDock, E-Machines, 408/541-6100, $699.** Heavy-duty Duo docking option is equipped with a full set of 11 ports, including an Ethernet port. The locking mechanism is alarmingly wobbly—although reliable enough to ensure a good connection. May 94

★★★ **Expert Pad PI-7000, 5harp Electronics Corp., 800/993-9737, $899.** Personal digital assistant features the advantages of the Newton, in a better industrial design and at a comparative price. If the battery lasted longer and the message network were implemented, the PDA revolution could begin. Feb 94

★★ **HP Optical Disk Library 10LC, Hewlett-Packard, 800/752-0900, $9495.** Optical jukebox may fill the need for 10 gigabytes of online storage, but its performance is poor, and the software lacks the features needed for adequate management. Jan 94

★★★★ **Infinity 105 Turbo, Peripheral Land, 510/657-2211, $795 to $894.** Small, light, quiet, inexpensive 105MB SyQuest drive is ingeniously packaged and ideal for both desktop and PowerBook use. Sep 93

★★★★ **LC 575, Apple Computer, 408/996-1010, $1699.** For students and small-business professionals who want high power and the convenience of having everything integrated into one case, this 33MHz 68040 system is an ideal choice. Jun 94

★ **NuTek Duet, NuTek U5A Corp., 408/973-8799, $2996.** Mac workalike is both a PC and a Mac in a single box, but because of many incompatibilities and problems, the Duet is not a computer anyone should consider using for serious work. Feb 94

★★★ **OrangePC, Orange Micro, 714/779-2772, $1799.** NuBus board has a DOS processor, letting you have your Mac and a PC, too. It's fairly well executed, though there are some minor problems. Oct 93

★★★ **PLI 2.4 GB MiniArray, PLI, 510/657-2211, $4815.** Slick and elegant RAID drive worked beautifully in tests, but it costs more than other options and the QuickSCSI board is sensitive to minor SCSI problems. Apr 94

★★★★ **PowerBook 140 F/25 Upgrade, Digital Eclipse Software, 510/547-6101, $399.** By changing the oscillators and adding an FPU, Digital Eclipse changes PowerBook 140s into 170s, minus the active matrix screen. While the upgrade seems expensive, it's the only way to extend the viability of a 140. Dec 93

★★ **PowerBook 165c, Apple Computer, 408/996-1010, 4/80 $3399.** The passive matrix screen of this color notebook computer is dull and has noticeable afterimages, but if your expectations are reasonable, the speedy processor provides a pleasant work environment. Jul 93

★★ **PowerBook 180c, Apple Computer, 408/996-1010, 4/80 $4169.** The active matrix screen of this color notebook computer is beautiful but so small that its usefulness is very limited. Sep 93

★★★★ **PowerBook Duo 270c, Apple Computer, 408/996-1010, 4/240 $3099.** Notebook computer meets all the demands of power users; it weighs less than five pounds, features a color active matrix display, and offers longer battery life. The lack of a floppy drive can be inconvenient, though. Feb 94

★★★★ **Power Macintosh 6100/60, Apple Computer, 408/996-1010, base model $1819.** Given its price and performance, this Power Macintosh is hard to resist. When developers offer in PowerPC format the software that most business users run daily, this should be a system that will give you power to spare. Jun 94

★★★★ **Quadra 605, Apple Computer, 408/996-1010, 4/80 $979.** Never before has Apple offered so much performance for so little money. The performance and price of this 040-based machine match those of a standard entry-level 486SX-based Windows PC. Mar 94

★★★★ **Quadra 800, Apple Computer, 408/996-1010, 8/230 $4679.** Squat, yet curvy and attractive, this minitower system has fewer expansion opportunities than the Quadra 950, but just as much power. It's fast, slick, and moderately priced. Aug 93

★★★★ **Quadra 840AV, Apple Computer, 408/996-1010, 8/230 $4069.** Technological tour de force uses a 40MHz 68040 and an AT&T 3210 digital signal processor, and is brimming with sophisticated speech-recognition and audiovisual technology. Beware of some hardware and software incompatibilities. Dec 93

★★★ **5C5I MicroDock, Newer Technology, 316/685-4904, $175.** Tiny Duo docking station is just under 4½ ounces and barely 5 inches long. It adds only an ADB port and a SCSI port—but both are useful. May 94

★★★★ **5ledgeHammer2000FMF, FWB, 415/474-8055, $3179.** RAID drive is both fast and inexpensive. Although it can be a bit noisy when accessing data, it's a good deal. Apr 94

★★★ **5mart5tack, Envisio, 612/628-6288, 5mart5ource $119; SmartModules $289 to $1379.** The SmartStack line of modular storage peripherals may be neatly stacked on top of a common power supply to reduce desktop clutter and cabling problems. Sep 93

★★★ **Turbo 040, DayStar Digital, 404/967-2077, $1899.** This accelerator card has the fastest 68040 chip available and is as fast as or faster than any Mac in processor-intensive tasks. For the price, however, it may make more sense to trade up to a faster computer. Dec 93

## VIDEO/DISPLAY

★★★ **Apple QuickTake 100 for Macintosh, Apple Computer, 408/996-1010, $749.** If you're in the market for a medium-quality, digital color camera that costs less than $1000, this is the best deal around. But if you're not in a hurry, you may want to wait until some of the camera's more obvious problems, such as its fixed-focus lens and lack of a zoom option, are ironed out. Jul 94

★★★ **AudioVision 14 Display, Apple Computer, 408/996-1010, $769.** Monitor integrates audio and video with built-in speakers that produce surprisingly rich, full-bodied sound. The display, while nice, is small for multimedia work. Dec 93

★★★ **Dycam Model 3, Dycam, 818/998-8008, $895.** Low-end, digital still camera is easy to use, and is a solid product if Instamatic grade gray-scale meets your image-quality requirements. Sep 93

★★★ **Editing Aces Suite, RasterOps, 801/785-5750, $3899.** Video professionals can record and play back full-screen movies in 24-bit color with 16-bit CD-quality sound with these products. Despite flaws, this package represents a step forward in QuickTime technology. Nov 93

★★★ **Intellicolor Display/20, Radius, 408/434-1010, $3199.** Although with its exceptional brightness and clarity this monitor would be a fine addition to any designer's desk, the included Intellicolor software, which lets you control the settings of your display, doesn't offer much added value. Apr 94

★★★★ **MovieMovie, 5igma Designs, 510/770-0100, $349.** This 7-inch NuBus video-capture board may be what you've been waiting for. The price is right, and the addition of on-board audio input is a plus, even if it is only mono. Dec 93

★★★ **PaintBoard Turbo, RasterOps, 408/562-4200, $1499.** Midrange video board supports 24-bit color on monitors up to 17 inches and resolutions as high as 1024 by 768 pixels. If you can live without changing resolutions on the fly, it's a reasonably good deal. Oct 93

★★★ **QA-350 LCD, 5harp Electronics Corp., 800/237-4277, $2495.** At less than half the cost of a typical active matrix LCD panel, this passive matrix projection panel offers an economical alternative for presenters who don't need multimedia capability. Jul 94

★★★ **VideoToolkit 2.0.1, Abbate Video, 508/376-3712, $279.** Despite a few rough edges, this is an attractive, inexpensive solution for those who need to catalog and edit videotapes on a budget. Sep 93 m

# Streetwise Shopper

SPECIAL HARDWARE AND SOFTWARE BUYING OPPORTUNITIES

**Selected and edited by Charles Barrett**

The following listings include both time-sensitive promotions and long-term offers being sponsored by Macintosh vendors and their resellers. Each listing indicates which products have been awarded a star rating in *Macworld's Reviews* (products rated ★★ or lower are not eligible for inclusion), have been selected as an Editors' Choice, or have won a World-Class award. In some cases, the editorial evaluation quoted is for an earlier product version. The ◀ symbol indicates that the product is Power Mac related.

When placing an order, please mention that you saw the offer in *Macworld*. Should any problems arise, contact the *Streetwise Shopper* editor by fax (415/442-0766), phone (415/978-3241), or mail (*Macworld*, 501 Second St., San Francisco, CA 94107).

Vendors and resellers desiring to have products and services included in this section are encouraged to contact the *Streetwise Shopper* editor with particulars.

## BUNDLES

**FlexScan Monitors + Colorific** Nanao USA will begin shipping Sonnetech's Colorific software-only color-management system, once it becomes available in August, to all FlexScan monitor (Jan 94 "Small Wonders" Editors' Choice for FlexScan F340i•W) customers who return their warranty registration cards. The Colorific versions destined for Nanao customers will list all FlexScan models on a menu, along with a standard VGA setting for non-Nanao monitors. Call 800/800-5202 for more information.

**Last Resort + Toner Tuner 1.0.6 + Working Watermarker 1.0.6** Working Software is offering a bundle of 3 of the 16 best utility programs (Apr 94 "Top Utilities"): its $49.95 Last Resort for storing keystrokes in text files; its $24.95 Toner Tuner for adjusting how much toner should be applied to each print job (Dec 93 ★★★★ for version 1.0.3); and its $49.95 Working Watermarker for printing or faxing text or graphics watermarks in the background of a page (Jan 94 ★★★ for version 1.02). Available direct (800/229-9675) for $89.95.

**MoviePak2 Pro Suite** RasterOps has combined several third-party products with its $1849 MoviePak2 compression daughterboard, $3249 24XLTV display adapter, and $649 Video Expander II RGB/NTSC encoder box to create a $4199 full-motion, 60-field QuickTime video-production system (Jun 94 "Video-Editing Tools" Editors' Choice): Adobe's $695 Premiere 3.0 QuickTime video-editing software (Jan 94 ★★★★); AISoft's $89.95 DiskExpress II disk-optimizer utility; and a special RS-422 Pro version of Abbate Video's $99 VTK Plug In Pack for professional VTR control. Call 800/729-2656 for more information.

**PowerBook 500 and Duo 200 Series + 12 Utilities + PowerPort/Mercury** Apple has integrated software into its 68040-based PowerBooks starting at $2269 and Duos starting at $2639 (Jul 94 "PowerBooks: The Next Generation")—including Apple Remote Access Client 2.0 for server connection, Macintosh PC Exchange 1.0.2 to read and write DOS/Windows floppy disks, PowerBook File Assistant synchronization package, PowerBook Control Strip 1.0 power-management utility, PowerTalk electronic-mail–management extension (for models with 12MB of RAM), and DataViz's MacLinkPlus Easy Open Translators for converting between Mac and DOS/Windows file formats. In addition, the 500 series comes with Global Village's 14,400-bps PowerPort/Mercury internal fax modem and GlobalFax application, plus ZTerm data communications software.

**SuperPaint 3.5 + HomePublisher 2.0** Aldus is bundling these two products in a Paint & Publish one-box collection with an "estimated street price" of $89.99. SuperPaint includes pressure-sensitive drawing tools, TWAIN support, and a QuickTime plug-in module. HomePublisher (formerly Personal Press) is an entry-level page-layout program that includes document templates, T/Maker Clickart images, 12 Bitstream TrueType fonts, and specialty paper. Call 800/888-6293 for more information.

**Thunder 7 1.5.3 + Magnet 1.0 + CPU 2.0.1 + Full Contact 2.01** Baseline Publishing is bundling its $99.95 Thunder 7 spelling checker and thesaurus (Nov 93 ★★★★) with No Hands Software's $129.95 Magnet intelligent-agent-based utility for automating file management (Feb 93 ★★★★), Connectix Corporation's $99 CPU PowerBook utility (Sep 93 ★★★★ for version 2.0), and FIT Software's $169 Full Contact personal information manager (Aug 94 ★★★). Available through MacWarehouse (800/255-6227) for $79.95. *Offer expires 8/31/94.*

## SIDEGRADES/UPGRADES

**CalendarMaker** CE Software is offering users of this calendar-making program (Oct 93 ★★★★ for version 4.0) a choice of upgrading to version 4.1 for $25, or to version 3.0.2 for $10. The 4.1 upgrade features over 50 layout styles, recurring-events editors, two formatting palettes, and six paint tools for color icon editing. The upgrade to 3.0.2 is available to those who are content with their current version's functionality but require System 7 compatibility. Call 800/523-7638 for more information. *Offer expires 8/31/94.*

**Mathematica 2.2** Wolfram Research is offering the $995 Enhanced Version (requires math coprocessor) of this symbolic mathematical computation system (Sep 93 ★★★★ for the Standard Version) to users of any other technical software program, for $395. Call 800/441-6284 for more information and to order. *Offer expires 7/15/94.*

**PowerMerge 2.0** Leader Technologies is offering this file-synchronization program (Aug 94 ★★★★) for $49 (regularly sells for $79) to users of competing synchronization and backup programs or PowerBook utility programs. Call 800/922-1787 to order. *Offer expires 9/30/94.*

## SPECIAL DISCOUNTS/REBATES/OFFERS

◀ **ClarisImpact** Claris Corporation is offering a special $149 introductory price for the native Power Mac version of this $399 integrated business-graphics program (Jun 94 ★★★★ for the 680X0 1.0 version). In addition, users of calendar-making, flowcharting, project-scheduling, data-charting, and organizational-charting programs can trade up to ClarisImpact (both the 680X0 and Power Mac versions are included) for $99. Call 800/544-8554 for more information. *Offer expires 9/30/94.*

**Claris Organizer** Claris Corporation is offering a special $49 introductory price for this soon-to-be-released (early August) $99 integrated personal information manager that allows you to access contact-management, calendar, to-do, and notes capabilities from a single floating palette. Call 800/325-2747 for more information. *Offer expires 9/30/94.*

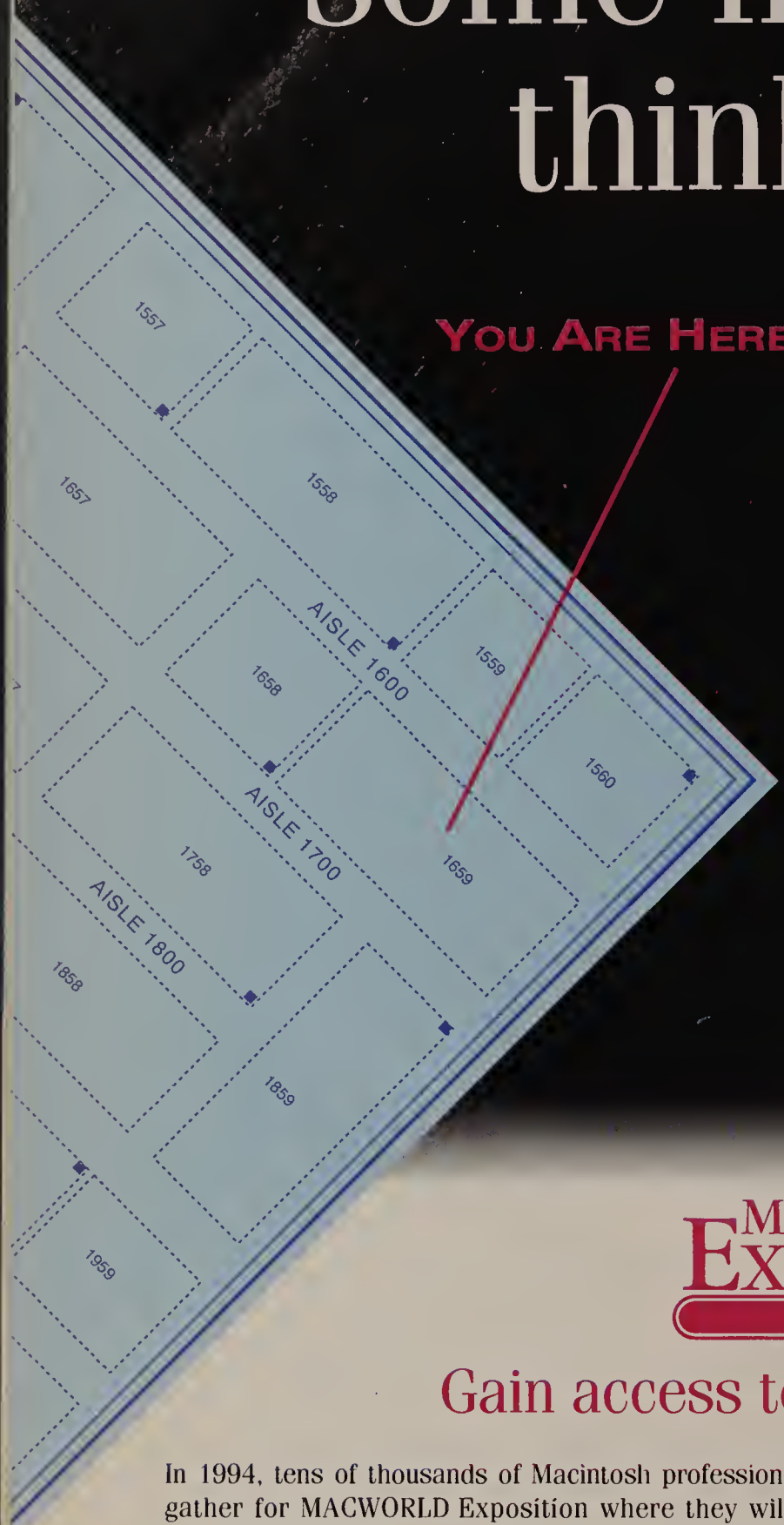
**Expert Pad Newton 1.3 Operating System** Sharp Electronics is offering version 1.3 of the Newton OS (version 1.05 can be downloaded from America Online or CompuServe with a Newton Connection Kit) to Expert Pad users for $49 (Apple charges $99, which includes two Newton applications). Besides increasing performance and fixing bugs, version 1.3 adds enhanced letter-by-letter and deferred handwriting recognition. Call 800/237-4277 for more information. *Offer expires 8/15/94.*

◀ **Power Macintosh Computers** Apple Commercial Credit, a partnership between Apple and Dana Commercial Credit, is offering rebates on every Power Macintosh it leases, according to the following schedule: $100 for the model 6100/60 (Jun 94 ★★★★) or 60AV; $200 for the 7100/66 (Aug 94 ★★★★★) or 66AV; and $300 for the 8100/80 (Aug 94 ★★★★) or 80AV. Customers who already have upgradable equipment on an Apple Business Lease can add a Power Macintosh upgrade to their current lease. Call 800/225-0513 for leasing program details. *Offer expires 9/30/94.*

**TelePort and PowerPort** Global Village is offering purchasers of its $349 TelePort Mercury, $279 TelePort Gold (Oct 93 "High-Speed Fax Modems" Editors' Choice), $399 PowerPort/Mercury, and $349 PowerPort/Gold (Dec 92 ★★★★) 14,400-bps and 19,200-bps fax modems a $100 rebate coupon toward the purchase of its $999 ($1199 for one-line LocalTalk; $1899 for two-line Ethernet) OneWorld Remote Access fax server (Aug 94 ★★★). Call 800/736-4821 for more information. *Offer expires 9/30/94.*

**VideoVision Studio** Radius is offering a $500 trade-in rebate toward the purchase of this $4495 video-production system (Jun 94 "Video-Editing Tools" Editors' Choice)—which comes bundled with Adobe Premiere (Jan 94 ★★★★ for version 3.0) and VideoFusion (Jul 93 ★★★ for version 1.0.1)—to owners who trade in a New Video, RasterOps, Sigma Designs, or SuperMac video-capture board. Call 800/966-7360 for more information. *Offer expires 8/31/94.* m

# If you think you just get some floor space, think again.



MACWORLD EXPOSITION

## Gain access to a world marketplace.

In 1994, tens of thousands of Macintosh professionals will gather for MACWORLD Exposition where they will make decisions about what products and services they'll buy now and in the coming year. Based on what they see and learn at MACWORLD Expo, they'll decide how to expand their system to expand their world.

**MACWORLD Expo/Boston – August 2-5, 1994**
**MACWORLD Expo/Canada – October 18-20, 1994**
**MACWORLD Expo/San Francisco – January 4-7, 1995**

Reserve your booth space today for MACWORLD Exposition and see how some floor space can turn the world into your marketplace.

Please send me more information on MACWORLD Expo.
I am interested in exhibiting in:
❑ Washington, D.C. ❑ Boston ❑ Canada ❑ San Francisco

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Phone _____ Fax _____

Mail to: Mitch Hall Associates
260 Milton Street, Dedham, MA 02026

Or Fax to: 617-361-3389 Phone: 617-361-8000

# Macworld Advertiser Index

Say you saw it in Macworld. To purchase products advertised in this issue call the phone numbers below or use the reader service number for our FastFacts Product Information Card located after the product index.


| Page No. | Advertiser | Reader Srvc. No. | Phone |
|---|---|---|---|
| 41-44 | Adobe | — | — |
| 51 | AEC Software | 44 | 800/450-1982 |
| 38 | AGFA Corporation | 158 | 800/685-4271 |
| 160 | Agio Designs | — | 800/688-2446 |
| 02-203 | Alliance Peripheral Systems | 62 | 800/874-1428 |
| 182A | America Online | 62 | 800/827-6364 |
| 50 | American Power Conversion | 72 | 800/788-2208 |
| 12 | Anthro | — | 800/325-3841 |
| 2-3 | Apple Computer | — | — |
| 22-23 | Apple Computer | — | — |
| 24 | Apple Computer | — | — |
| 53 | Apple Computer | — | — |
| 54-55 | Apple Computer | — | — |
| 56-57 | Apple Computer | — | — |
| 26 | Attain Software | 6 | 617/776-1110 |
| 8 | Battery Technology | 205 | 800/982-8284 |
| 08-209 | BottomLine Distribution | 63 | 512/472-4956 |
| 74 | Caere Corporation | 69 | 800/535-SCAN |
| 40 | CDROM Expo | — | 617/361-8000 |
| 134 | Charles River Analytics Inc. | 18 | 800/913-3535 |
| 162 | Charles Schwab & Company Inc. | 277 | 800/435-9258 |
| 29 | Claris Corporation | — | — |
| 06-107 | Claris Corporation | — | 800/544-8554 |
| 00-201 | ClubMac | 96 | 800/CLUB MAC |
| 179 | CoActive | 142 | 800/PC-SHARE |
| 16-117 | CompuServe | 66 | 800/848-8199 |
| 88-89 | Computer Discount Warehouse | 2 | 800/861-4CDW |
| 46 | Connectix | 189 | 800/950-5880 |
| 21 | Contemporary Cybernetics Group | 188 | 800/873-9000 |
| 72 | Corel Corporation | 78 | 800/836-3729 |
| 199 | CRA Systems Incorporated | 20 | 800/375-9000 |
| 98-99 | Dantz Development | 26 | 510/253-3020 |
| 155 | Dayna Communications | 161 | 800/443-2962 |
| 11 | Delphi | 173 | 800/965-4005 |
| 215 | Digital Axis | 83 | 800/747-7555 |
| 214 | Direct Connections | 121 | 800/572-4305 |
| 251 | Educorp | 157 | 800/843-9497 |
| 28 | Engineered Software | 12 | 910/299-4843 |
| 6-7 | Epson America | — | 800/BUY-EPSON |
| 204-205 | Express Direct | 81 | 800/765-0020 |
| 32 | Focus Enhancements | 201 | 800/538-4888 |
| 144 | Fujitsu | 202 | — |
| 14 | GDT Softworks | 32/42 | 800/663-6222 |
| 181A-181B | Global Village | 156 | 800/736-4821 |
| 82 | Graphsoft | 46 | 410/290-5114 |
| 97 | Hewlett Packard | 11 | 800/354-7622 |
| 52 | HSC Software | 7 | 310/392-8441 |
| 165 | HSC Software | 5 | 310/392-8441 |
| 217 | IDG | — | — |
| 161 | Insignia Solutions Incorporated | — 68 | — 800/848-7677 |
| 146 | Inspiration Software | — | 800/877-4292 |
| BC | Kensington Microware Ltd. | — | 800/535-4242 |
| 16-17 | La Cie | 52 | 800/999-1422 |
| 105 | La Cie | 51 | 800/999-1422 |
| 133 | La Cie | — | 800/999-1422 |
| 135 | La Cie | 54 | 800/999-1422 |
| 142 | LaserMaster | 43 | 800/950-6868 |
| 176 | LOGICODE Technology, Inc. | 297 | 800/735-6442 |
| 212-213 | Mac Bargains | 70 | 800/619-9091 |
| 76 | MacAcademy | 106 | 800/527-1914 |
| 67-69 | MacConnection | — | 800/800-3333 |
| 193-198 | MacMall | 131 | 800/222-2808 |
| 206-207 | MacWarehouse | 150 | 800/255-6227 |
| 188 | Macworld Expo | | 617/361-8000 |
| 216 | MegaHaus Corporation | 245 | 800/786-1184 |
| 120-121 | MicroNet Technology, Inc. | 139 | 800/800-DISK |
| IFC -1 | Microsoft Corporation | — | — |
| 86 | Microtek Lab Incorporated | 287 | 800/654-4160 |
| 13 | Mirror Technologies | 58 | — |
| 78 | Mobius Technologies Incorporated | 109 | 800/800-4334 |
| 48 | Momentum Incorporated | 8 | 800/263-0088 |
| 159 | NEC Technologies | 15 | 800/NEC-INFO |
| IBC | NEC Technologies | 16 | 800/NEC-INFO |
| 18 | Now Software | — | 800/237-2078 |
| 20 | nView Corp. | 117 | 800/736-8439 |
| 160 | Panelight Display Systems | 1 | 800/726-3599 |
| 64 | Photonics | 298 | 800/628-3033 |
| 27 | Pinnacle Micro Incorporated | 115 | 800/553-7070 |
| 175 | Pinnacle Micro Incorporated | 178 | 800/553-7070 |
| 49 | Polaroid Corporation | 119 | 800/816-2611 |
| 84-85 | Portrait Display Labs | 89 | 800/858-7744 |
| 210 | ProDirect | 135 | 800/524-9952 |
| 15 | Proxima Corporation | 47 | 800/447-7694 |
| 248-250 | Quality Computers | 263 | 800/777-3612 |
| 179A-179B | Radius | 146 | 800/227-2795 |
| 80 | Rasterops | 90 | 800/SAY-COLOR |
| 28 | ScanCo | — | 800/722-6263 |
| 166 | Seiko Instruments USA Inc. | 149 | — |
| 168-171 | Signature Software | 300 | — |
| 132 | SoftArc, Inc. | 299 | 905/415-7000 |
| 130 | Specular | 41 | 800/433-7732 |
| 147 | Statsoft | 99 | 918/583-4149 |
| 10 | Strata | 114 | 800/869-6855 |
| 211 | SuperMicro | 126 | 800/352-3415 |
| 47 | SyQuest | 249 | 800/245-2278 |
| 70 | Tektronix | 143 | 800/835-6100 |
| 48 | TRIAM, Inc. | 211 | 714/530-9984 |
| 9 | ViewSonic | 237 | 800/888-8583 |
| 148-149 | WordPerfect Corporation | — | 800/526-7820 |
| 30-31 | Xerox Corporation | 100 | — |
| 156 | Xircom | 269 | 800/438-4526 |


TURN TO THE MACWORLD SHOPPER ON PAGE 218 TO FIND ADDITIONAL ADVERTISERS.

**InfoFAX**

For instant faxed back information,

call 1-800-234-0455

enter extension 505 for Now Software

# Macworld Product Index

A quick and easy product index from Macworld. Simply use this index to find the page or advertiser of the products which interest you. Then, use the reader service number for our FastFacts Product Information Card located on the following page.


## SOFTWARE

### BUSINESS

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 51 | AEC Software | 44 |
| 26 | Attain Software | 6 |
| 162 | Charles Schwab & Company Inc. | 277 |
| 106-107 | Claris Corporation | — |
| 146 | Inspiration Software | — |
| IFC -1 | Microsoft Corporation | — |
| 168-171 | Signature Software | 300 |
| 147 | Statsoft | 99 |
| 148-149 | WordPerfect Corporation | — |

### CAD/CAM

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 28 | Engineered Software | 12 |
| 82 | Graphsoft | 46 |

### CD ROM

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 72 | Corel Corporation | 78 |
| 251 | Educorp | 157 |

### COMMUNICATION

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 64 | Photonics | 298 |
| 132 | SoftArc, Inc. | 299 |

### EDUCATIONAL

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 248-250 | Quality Computers | 263 |

### FONTS

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 168-171 | Signature Software | 300 |

### GRAPHICS/DTP

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 41-44 | Adobe | |
| 29 | Claris Corporation | — |
| 106-107 | Claris Corporation | — |
| 72 | Corel Corporation | 78 |
| 52 | HSC Software | 7 |
| 165 | HSC Software | 5 |
| 130 | Specular | 41 |
| 10 | Strata | 114 |

### MISCELLANEOUS

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 146 | Inspiration Software | — |

### MULTIMEDIA

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 41-44 | Adobe | — |

### NETWORKING

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 64 | Photonics | 298 |
| 132 | SoftArc, Inc. | 299 |

### OCR

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 74 | Caere Corporation | 69 |

### STATISTICAL

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 147 | Statsoft | 99 |

### UTILITIES

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 134 | Charles River Analytics Inc. | 18 |
| 46 | Connectix | 189 |
| 98-99 | Dantz Development | 26 |
| 14 | GDT Softworks | 32/42 |
| 161 | Insignia Solutions Incorporated | 68 |
| 18 | Now Software | — |

### WORD PROCESSING

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 148-149 | WordPerfect Corporation | — |

## HARDWARE

### BOARDS

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 179A-179B | Radius | 146 |
| 80 | Rasterops | 90 |

### CD ROM

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 251 | Educorp | 157 |
| IBC | NEC Technologies | 16 |
| 211 | SuperMicro | 126 |

### COMPUTER SYSTEMS

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 2-3 | Apple Computer | — |
| 24 | Apple Computer | — |
| 54-55 | Apple Computer | — |
| 56-57 | Apple Computer | — |
| 208-209 | BottomLine Distribution | 63 |
| 199 | CRA Systems Incorporated | 20 |
| 204-205 | Express Direct | 81 |

### DIGITIZERS/SCANNERS

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 38 | AGFA Corporation | 158 |
| 74 | Caere Corporation | 69 |
| 215 | Digital Axis | 83 |
| 6-7 | Epson America | — |
| 86 | Microtek Lab Incorporated | 287 |
| 13 | Mirror Technologies | 58 |

### DISPLAY

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 199 | CRA Systems Incorporated | 20 |
| 215 | Digital Axis | 83 |
| 13 | Mirror Technologies | 58 |
| 78 | Mobius Technologies Incorporated | 109 |
| 20 | nView Corp. | 117 |
| 160 | Panelight Display Systems | 1 |
| 49 | Polaroid Corporation | 119 |
| 84-85 | Portrait Display Labs | 89 |
| 15 | Proxima Corporation | 47 |
| 48 | TRIAM, Inc. | 211 |
| 9 | ViewSonic | 237 |

### EXPANSIONS/UPGRADES

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 78 | Mobius Technologies Incorporated | 109 |

### HARD DISKS/STORAGE

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 202-203 | Alliance Peripheral Systems | 62 |
| 200-201 | ClubMac | 96 |
| 21 | Contemporary Cybernetics Group | 188 |
| 214 | Direct Connections | 121 |
| 144 | Fujitsu | 202 |
| 16-17 | La Cie | 52 |
| 105 | La Cie | 51 |
| 133 | La Cie | — |
| 135 | La Cie | 54 |
| 216 | MegaHaus Corporation | 245 |
| 120-121 | MicroNet Technology, Inc. | 139 |
| 27 | Pinnacle Micro Inc. | 115 |
| 175 | Pinnacle Micro Inc. | 178 |
| 210 | ProDirect | 135 |
| 211 | SuperMicro | 126 |
| 47 | SyQuest | 249 |

### INPUT DEVICES

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| BC | Kensington Microware Ltd. | — |

### MISCELLANEOUS

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 8 | Battery Technology | 205 |

### MODEMS

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 181A-181B | Global Village | 156 |
| 176 | LOGICODE Technology, Inc. | 297 |

### MULTIMEDIA

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 160 | Panelight Display Systems | 1 |

### NETWORKING

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 50 | American Power Conversion | 72 |
| 155 | Dayna Communications | 161 |
| 32 | Focus Enhancements | 201 |
| 181A-181B | Global Village | 156 |
| 48 | Momentum Incorporated | 8 |
| 156 | Xircom | 269 |

### POWERBOOKS

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| BC | Kensington Microware Ltd. | — |

### PRINTERS

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 14 | GDT Softworks | 32/42 |
| 97 | Hewlett Packard | 11 |
| 142 | LaserMaster | 43 |
| 159 | NEC Technologies | 15 |
| 166 | Seiko Instruments USA Inc. | 149 |
| 70 | Tektronix | 143 |
| 30-31 | Xerox Corporation | 100 |

### VIDEO

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 179A-179B | Radius | 146 |
| 80 | Rasterops | 90 |

## SERVICES

### ON LINE

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 182A | America Online | |
| 53 | Apple Computer | |
| 116-117 | CompuServe | |
| 11 | Delphi | |

### TRAINING

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 76 | MacAcademy | |

### TRADESHOWS/CONFERENCES

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 40 | CDROM Expo | |
| 188 | Macworld Expo | |

## ACCESSORIES

### FURNITURE

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 160 | Agio Designs | |
| 12 | Anthro | |
| 28 | ScanCo | |

### MISCELLANEOUS

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 8 | Battery Technology | |
| 28 | ScanCo | |

## MAIL ORDER

| Page No. | Advertiser | Reader Srvc. No. |
|---|---|---|
| 202-203 | Alliance Peripheral Systems | |
| 208-209 | BottomLine Distribution | |
| 200-201 | ClubMac | |
| 88-89 | Computer Discount Warehouse | |
| 214 | Direct Connections | |
| 204-205 | Express Direct | |
| 67-69 | MacConnection | |
| 193-198 | MacMall | |
| 206-207 | MacWarehouse | |
| 216 | MegaHaus Corporation | |
| 210 | ProDirect | |
| 248-250 | Quality Computers | |

# Macworld

## JUST FOR YOU. FREE PRODUCT INFORMATION FROM MACWORLD.

**There's no cost or obligation. We even pay the postage! Simply fill in the questionnaire, then circle the numbers on the card below for the products that interest you. Numbers for advertised products can be found in the ad and in both the Product Index and Ad Index. Fold card and mail. No staples please.**

**FASTFAX**
For faster results just fax this sheet to +1-413-637-4343. Please indicate your fax number where indicated.

**Please answer these questions so that we may better serve you.**

A. Including yourself, approximately how many people are employed at your entire work-site (i.e., employees in your office, building, or cluster of buildings)? (Check one.)

- 01 ❑ 1000+
- 02 ❑ 999 - 100
- 03 ❑ 99 - 25
- 04 ❑ Under 25

B. Which of the following computers are installed at this entire work-site? (Check all that apply.)

- 05 ❑ Apple Workgroup Servers/ Mac Quadra-series
- 06 ❑ Mac Centris-series/II-series/LC III/ Performa 600/450/SE 30
- 07 ❑ Mac LC/LC II/Performa 430/405/ 400/200/Classic-series/SE/Plus/ 512K/128K/Portable
- 08 ❑ Mac PowerBook-series/Duo-series

C. What is the total number of Macs installed at this entire work-site? (Check one.)

D. For how many Macintosh computers within this entire work-site do you have purchase involvement for products and/ or services? (Check one.)

| | C | D |
|---|---|---|
| 500+ | ❑ 09 | ❑ 15 |
| 499 - 100 | ❑ 10 | ❑ 16 |
| 99 - 50 | ❑ 11 | ❑ 17 |
| 49 - 10 | ❑ 12 | ❑ 18 |
| 9 - 1 | ❑ 13 | ❑ 19 |
| None | ❑ 14 | ❑ 20 |

E. In which ways are you ever involved in purchase decisions for Macintosh products at this entire work-site? (Check all that apply.)

- 21 ❑ Initiate/Determine need for product/capabilities/features
- 22 ❑ Evaluate, recommend, or approve brands/models
- 23 ❑ Evaluate, recommend, or approve purchase source
- 24 ❑ Authorize purchases

F. Over the next 12 months, how much will this entire work-site spend on Macintosh products and/or services? (Check one.)

- 25 ❑ $1 million or more
- 26 ❑ $999,999 – $500,000
- 27 ❑ $499,999 – $100,000
- 28 ❑ $99,999 – $50,000
- 29 ❑ $49,999 – $10,000
- 30 ❑ Under $10,000

G. Considering the entire work-site, which of the following Macintosh hardware and software products are currently installed? (Check all that apply.)

- 31 ❑ Business software (Word processing, spreadsheet, database, etc.)
- 32 ❑ Graphics/publishing software
- 33 ❑ Monitors/displays
- 34 ❑ Printers/scanners
- 35 ❑ Networking/communications hardware and/or software
- 36 ❑ Multimedia/AV hardware and/or software
- 37 ❑ Mobile computing products (PowerBooks, peripherals, software, etc.)

H. What is your primary job function? (Check one.)

- 38 ❑ Computer Reseller/VAR/VAD
- 39 ❑ MIS/DP/IS/Network Management
- 40 ❑ Engineering
- 41 ❑ R&D/Scientific
- 42 ❑ Corporate/General Management
- 43 ❑ Accounting/Finance
- 44 ❑ Marketing/Sales/PR/ Communications
- 45 ❑ Art/Design/Creative Services

**Thank You!**

**Please print or type all information.**

Title _____

Co. _____

Phone _____

Fax _____

**Free Product Information**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 151 | 152 | 153 | 154 | 155 |
| 6 | 7 | 8 | 9 | 10 | 156 | 157 | 158 | 159 | 160 |
| 11 | 12 | 13 | 14 | 15 | 161 | 162 | 163 | 164 | 165 |
| 16 | 17 | 18 | 19 | 20 | 166 | 167 | 168 | 169 | 170 |
| 21 | 22 | 23 | 24 | 25 | 171 | 172 | 173 | 174 | 175 |
| 26 | 27 | 28 | 29 | 30 | 176 | 177 | 178 | 179 | 180 |
| 31 | 32 | 33 | 34 | 35 | 181 | 182 | 183 | 184 | 185 |
| 36 | 37 | 38 | 39 | 40 | 186 | 187 | 188 | 189 | 190 |
| 41 | 42 | 43 | 44 | 45 | 191 | 192 | 193 | 194 | 195 |
| 46 | 47 | 48 | 49 | 50 | 196 | 197 | 198 | 199 | 200 |
| 51 | 52 | 53 | 54 | 55 | 201 | 202 | 203 | 204 | 205 |
| 56 | 57 | 58 | 59 | 60 | 206 | 207 | 208 | 209 | 210 |
| 61 | 62 | 63 | 64 | 65 | 211 | 212 | 213 | 214 | 215 |
| 66 | 67 | 68 | 69 | 70 | 216 | 217 | 218 | 219 | 220 |
| 71 | 72 | 73 | 74 | 75 | 221 | 222 | 223 | 224 | 225 |
| 76 | 77 | 78 | 79 | 80 | 226 | 227 | 228 | 229 | 230 |
| 81 | 82 | 83 | 84 | 85 | 231 | 232 | 233 | 234 | 235 |
| 86 | 87 | 88 | 89 | 90 | 236 | 237 | 238 | 239 | 240 |
| 91 | 92 | 93 | 94 | 95 | 241 | 242 | 243 | 244 | 245 |
| 96 | 97 | 98 | 99 | 100 | 246 | 247 | 248 | 249 | 250 |
| 101 | 102 | 103 | 104 | 105 | 251 | 252 | 253 | 254 | 255 |
| 106 | 107 | 108 | 109 | 110 | 256 | 257 | 258 | 259 | 260 |
| 111 | 112 | 113 | 114 | 115 | 261 | 262 | 263 | 264 | 265 |
| 116 | 117 | 118 | 119 | 120 | 266 | 267 | 268 | 269 | 270 |
| 121 | 122 | 123 | 124 | 125 | 271 | 272 | 273 | 274 | 275 |
| 126 | 127 | 128 | 129 | 130 | 276 | 277 | 278 | 279 | 280 |
| 131 | 132 | 133 | 134 | 135 | 281 | 282 | 283 | 284 | 285 |
| 136 | 137 | 138 | 139 | 140 | 286 | 287 | 288 | 289 | 290 |
| 141 | 142 | 143 | 144 | 145 | 291 | 292 | 293 | 294 | 295 |
| 146 | 147 | 148 | 149 | 150 | 296 | 297 | 298 | 299 | 300 |

**Free Macworld Shopper Information**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 401 | 402 | 403 | 404 | 405 | 501 | 502 | 503 | 504 | 505 |
| 406 | 407 | 408 | 409 | 410 | 506 | 507 | 508 | 509 | 510 |
| 411 | 412 | 413 | 414 | 415 | 511 | 512 | 513 | 514 | 515 |
| 416 | 417 | 418 | 419 | 420 | 516 | 517 | 518 | 519 | 520 |
| 421 | 422 | 423 | 424 | 425 | 521 | 522 | 523 | 524 | 525 |
| 426 | 427 | 428 | 429 | 430 | 526 | 527 | 528 | 529 | 530 |
| 431 | 432 | 433 | 434 | 435 | 531 | 532 | 533 | 534 | 535 |
| 436 | 437 | 438 | 439 | 440 | 536 | 537 | 538 | 539 | 540 |
| 441 | 442 | 443 | 444 | 445 | 541 | 542 | 543 | 544 | 545 |
| 446 | 447 | 448 | 449 | 450 | 546 | 547 | 548 | 549 | 550 |
| 451 | 452 | 453 | 454 | 455 | 551 | 552 | 553 | 554 | 555 |
| 456 | 457 | 458 | 459 | 460 | 556 | 557 | 558 | 559 | 560 |
| 461 | 462 | 463 | 464 | 465 | 561 | 562 | 563 | 564 | 565 |
| 466 | 467 | 468 | 469 | 470 | 566 | 567 | 568 | 569 | 570 |
| 471 | 472 | 473 | 474 | 475 | 571 | 572 | 573 | 574 | 575 |
| 476 | 477 | 478 | 479 | 480 | 576 | 577 | 578 | 579 | 580 |
| 481 | 482 | 483 | 484 | 485 | 581 | 582 | 583 | 584 | 585 |
| 486 | 487 | 488 | 489 | 490 | 586 | 587 | 588 | 589 | 590 |
| 491 | 492 | 493 | 494 | 495 | 591 | 592 | 593 | 594 | 595 |
| 496 | 497 | 498 | 499 | 500 | 596 | 597 | 598 | 599 | 600 |

❑ Check box and fill in the appropriate information to subscribe to Macworld. You will be billed $24.00 for a 1-year (12 issue) subscription (U.S. only).

Expires Oct 6, 1994 X1 August 1994

**Please print or type all information.**

Name _____

Address _____

City _____

State _____ Zip _____

# FREE PRODUCT INFORMATION.

Get valuable information about the products that interest you. There's no cost; no obligation. Just fill out both sides of this FASTFACTS Information form. Circle the numbers for the desired products. Then mail the card. We pay the postage! For even faster results fill out and send the card via our FASTFAX.
Now fast... get the facts, the competition's gaining on you.

**Macworld**

FOLD HERE AND CLOSE WITH TAPE. DO NOT STAPLE!

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

## BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

**Macworld**

Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906

# Creative Computers' MacMall is the first full line...

Authorized Catalog Reseller

## Now you can order Apple® Macintosh® computers by mail.

*Creative Computers' MacMall* announces a breakthrough partnership with Apple® Computer, Inc. that will forever change the way you buy Apple Macintosh® products. As the first Apple Authorized Catalog Reseller, *Creative Computers' MacMall* brings you the same level of award-winning service and low pricing that has made us the #1 Apple Macintosh® Reseller in Southern California *and* the fastest growing Macintosh mail-order company. You can now purchase any Apple product by mail through our catalogs. You benefit from a full Apple warranty, toll-free technical support, helpful salespeople, and the peace of mind that comes with buying from a company that is an Apple Authorized Catalog Reseller. For a free copy of our giant catalog, call **1-800-222-2808** today or fill out the form below and we will send you one right away.

**Look over the following pages for a sample of our great selection and pricing.**

**For a copy of our catalog, call**

# 1-800-222-2808

Hours: Monday–Friday 5am to 7pm (pst)
Saturday/Sunday 7am to 6pm (pst)

☐ *Send me a one year catalog subscription*

Name _____

Address _____

City _____ State _____ Zip _____

Mail to: MacMall, Dept. ADV, 2645 Maricopa St., Torrance CA 90503

*FedEx® shipping only $3.00**

*$3.00 offer applies to orders up to 10lbs, contiguous U.S. only.

Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc.

Offer Code: D472MG14

HEWLETT® PACKARD
AUTHORIZED RESELLER

CREATIVE COMPUTERS
MacMall™
YOUR MAC SUPERSTORE!™

**ORDER TOLL FREE**
**800-222-2808**
Call us for all your Apple Macintosh® Needs!

# The HP DESKWRITER

## 300 DPI InkJet Printer

- 35 Scalable Fonts
- Prints up to 3 pages per minute
- Water-resistant ink
- 256 levels of greyscale for great graphics
- Built-in print spooler
- Three-year limited warranty

*Brand new! Limited Supply – Good while supplies last.*

**SUPER BUY!**
INCREDIBLE!
$198
2075

## HP DESKWRITER 520

**InkJet Printer**

HP's most affordable high-quality printer

- Clear, sharp 600x300 dpi professional quality output – HP's exclusive Resolution Enhancement technology
- Grayscale printing for dramatic black graphics
- 35 TrueType scalable fonts
- AppleTalk and serial interfaces

$289
63820

## HP DESKWRITER 560C

**3-YEAR LIMITED WARRANTY!**

HP's affordable high-quality black and color printer for the Macintosh computer.

- Clear, sharp 600x300 dpi professional quality output HP's exclusive Resolution Enhancement technology
- Easy color printing with ColorSmart technology
- Prints up to 3 pages per minute in black, and an average of 4 minutes per page in color
- Resident black and color ink cartridges for convenient black and color printing without switching cartridges
- 35 TrueType scalable fonts
- AppleTalk and serial interfaces

$579
63821

## HP LASERJET 4ML

- HP Resolution Enhancement technology and microfine toner produce the best 300dpi output available
- PostScript Level 2
- 35 Adobe scalable fonts
- RISC-based Intel 80960KA processor
- 4 MB RAM standard memory
- Macintosh and Windows PC compatible

$1029
61793

## HP LASERJET 4MP

- True 600dpi resolution utilizing Resolution Enhancement technology and microfine toner
- PostScript Level 2
- 35 Adobe scalable fonts
- RISC-based Intel 80960KA
- 6 MB RAM standard memory
- Macintosh and Windows PC compatible

$1369
62758

## HP SCANJET II SCANNERS

## HP SCANJET IIp

**300dpi, Greyscale Flatbed Scanner**

- 8 bit grey scale provides high quality reproduction
- New AccuPage 2.0 technology features makes third-party OCR software even more accurate
- Print-path calibration optimizes settings for high-quality output
- Automatic exposure saves time and eliminates guesswork

$479
60124

**Bonus: Includes FREE Calera WordScan OCR Software**

## HP SCANJET IIcx

**The high performance color/greyscale scanner that provides advanced features at a breakthrough price!**

- Superior image quality with 1600 DPI enhanced resolution; 400 DPI optical resolution
- 24-Bit color allows you to recognizse and scan over 16 million colors
- HP AccuPage 2.0 for better text recognition
- Optional transparency adapter available
- Optional 50-page document feeder available
- One-year HP Express Exchange Warranty for 24-hour replacement service

NEW PRODUCT!
$949
62885

## HP DESKWRITER 310

*The new HP DeskWriter 310 printer, no-compromise printing for Apple Macintosh PowerBook® users.*

- Crisp 300 dpi black print
- Optional color kit for amazing color output
- Fast – up to 3 pages per minute
- Compact and lightweight
- 35 scalable fonts built-in
- Background printing
- Optional rechargable battery

$309
62564

| | | |
|---|---|---|
| HP Fax 900 12 sec./pg. | $789.00 | 62567 |
| DeskWriter 550C | $489.00 | 60746 |
| DeskWriter C | $395.00 | 3310 |
| DeskWriter black ink cartridge (high capacity) | $24.99 | 60123 |
| DeskWriter color ink cartridge | $27.99 | 3344 |
| EP-S Toner Cartridge | $84.99 | 51071 |
| LaserJet 4 toner cartridge | $104.99 | 60834 |
| LaserJet 4L/4ML toner cartridge | $59.99 | 61890 |
| PostScript Software for HP | $189.99 | 61889 |
| DeskWriter 310 sheet feeder | $69.99 | 60749 |
| DeskWriter 310 color kit | $36.99 | 62565 |
| DeskWriter 310 black ink cartridge | $17.99 | 63511 |

Offer Code: D472MG14

MacMall FAX Order Line: 310-222-5800
Order Status: 800-560-6800

**LOWEST PRICES? YEAH!**

*If you see a lower price advertised in this magazine, please call us and we'll do our very best to BEAT that advertised price!**

LOWEST PRICES ANYWHERE

CREATIVE COMPUTERS

# MacMall

YOUR MAC SUPERSTORE!™

# ORDER TOLL FREE 800-222-2808

Call us for all your Apple Macintosh® Needs!

## UMAX

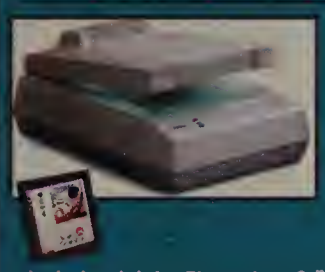
Maximize your image.™

### UC1260 1200dpi Color Scanner

The Table Flatbed scanner gives you [illegible] vertical resolution and the ability to [illegible] types of colors.

- Supports material up to 8.5" x 14"
- 2400 dpi resolution through software
- Includes FULL Adobe Photoshop 2.5
- Optional document feeder & transparency option

$1199.99 — 61198



### UC630LE 600 dpi Color Scanner

$599.99 — 62568

- Includes Adobe Photoshop 2.5LE
- Supports materail up to 8.5"x14"
- Shown with optional transparency scanner
- Scan up to 1200dpi through software
- Rated "Four and a Half Mice" by MacUser Magazine!
- Now bundled with Apples's PHOTOFLASH software to simplify the scanning process

UC840 800dpi ..... $894.99
(with full copy of Adobe Photoshop 2.5)
Transparency Adapter (for UC630LE)..... $497.99

## SAMSUNG MONITORS

### SyncMaster™ 14GL 14" Color Monitor

- 1024x768 at 76Hz refresh rates
- .28mm dot pitch
- Digital (one touch) picture controls
- Tilt-swivel base

$309.99 — 64560

### SyncMaster™ 15GL 15" Color Monitor

- 1024x768 at 76Hz refresh rates
- .28mm dot pitch
- Digital (one touch) picture controls
- Tilt-swivel base

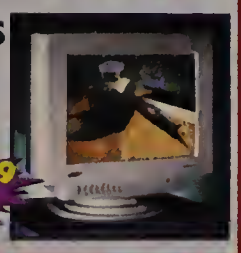
$399.99 — 64581

### SyncMaster™ 17GL 17" Color Monitor

- 1280x1024 (max. res.) at 60Hz refresh rates
- .28mm dot pitch
- INVAR shadow mask
- Tilt-swivel base

$779.99 — 64537

### SyncMaster™ 17GLs 17" Color Monitor



- 1600x1200 (max.res.) at 60Hz refresh rates
- .28mm dot pitch
- INVAR shadow mask/ New AR coating
- Tilt-swivel base

$879.99 — 64533

## Super CD-ROM Buy!!

$99 — 64348

- Single speed drive; NEC mechanism
- Caddy-less, all-in-one design
- Includes FREE FWB CD-ROM Toolkit
- Comes with Cable and SCSI Terminator
- Brand New with One Year Warranty

## VividCD Drive DOUBLE SPEED EXTERNAL CD-ROM!

$199 — 64925

- Double spin speed
- Photo CD (Multisession) Compatible
- Includes FREE FWB CD-ROM Toolkit
- SCSI system cable and external terminator extra

## Save up to $500 on CD-ROMs...

Purchase any CD-ROM drive from MacMall and you can purchase any of these great CD-ROM BUNDLES shown, for as low as $74.99! Bundles are only available with CD-ROM drive purchase, ordered at the same time.

### ENCYCLOPEDIA BUNDLE

INCLUDES THESE GREAT TITLES:

- Groliers Multimedia Encyclopedia CD
- Animals CD
- US Atlas CD
- World Atlas CD

$97.99 — 63310

### HOME BUNDLE

INCLUDES THESE GREAT TITLES:

- Family Doctor CD
- Complete Shakespeare
- Audubon Birds CD
- Audubon Mammals

$86.99 — 63311

### REFERENCE BUNDLE

INCLUDES THESE GREAT TITLES:

- Guinness Book of World Records CD
- Mayo Clinic CD
- Color It! CD
- Capitol Hill CD

$86.99 — 63971

### ENTERTAINMENT BUNDLE

INCLUDES THESE GREAT TITLES:

- Indiana Jones CD
- Secret of Monkey Island CD
- Secret of Monkey Island 2
- Space Shuttle

$74.99 — 63713

## Newer™ TECHNOLOGY

FIVE YEAR WARRANTY

### PowerBook Duo MicroDocks

Ultra-small and low cost, Newer's 3 MicroDock™ models provide connectivity and portability for Duo Users.

**SCSI MicroDock™**, the first portable SCSI solution, provides SCSI and ADB ports. Exclusive features include active termination for low power consumption and more reliable connection to hard drives and other Macintosh computers. Get SCSI-mode and SCSI Disk mode operation with any PowerBook SCSI cable.

$139.99 — 62324

**Color MicroDock™**, the first low-cost portable color solution, supports VGA, SVGA, and Apple's 12- to 16-inch color monitors in 256 colors (8-Bit) and 19- and 20-inch monitors in 16 colors (4-Bit). Audio out and ADB ports included. NTSC adapter available.

$267.99 — 62323

**Ethernet MicroDock**, the first portable Ethernet solution, provides easy RJ45 10BaseT Ethernet network connection. Included software monitors hardware in the background for network errors. Full SNMP support. Promiscuous mode. Comes with a standard ten-foot 10BaseT cable.

$163.99 — 64586

## Quadra Cache™ The Slot-Free Cache Solution

Add 128K of high-speed "slotless" cache to Quadra 605, 610, 650, 700, 800, 900, 950 and Centris 610 and 650 Macintosh computers. Quadra Cache™ allows users to enjoy improved performance while leaving the PDS and NuBus slots open for other high-speed upgrades. Fits in the existing CPU socket, boosts your Macintosh computer's performance by up to 40%! Comes with a 2-Year Warranty.

$254.99 — NEW

## GLOBAL VILLAGE COMMUNICATION

### THE NEW POWERPORT SERIES

offers unsurpassed fax/modem reliability and high speed. Communicate at 19,200 bps, and even faster speeds using v.42bis compression. And with FAX speeds of 14,400 bps your communications are faster than ever before. Includes GlobalFax OCR software to convert received faxes into editable files. Also includes: ZTerm, GlobalFax and America Online software FREE!

| | | |
|---|---|---|
| PowerPort Mercury for PowerBooks (145 to 180) | $334.99 | 63062 |
| TelePort Mercury for Desktop Macs | $299.99 | 63061 |
| PowerPort Gold for PowerBooks with 14.4 bps send and receive data/FAX | $289.99 | 60467 |
| TelePort Gold for desktop Macs with 14.4 bps send and receive data/FAX | $239.99 | 60661 |
| PowerPort Silver for PowerBooks with 9,600 bps send and receive data/FAX | $264.99 | 60466 |
| TelePort Bronzell for Desktop Macs with 2,400 bps data and 9,600 bps FAX | $96.99 | 61920 |

CREATIVE COMPUTERS MacMall YOUR MAC SUPERSTORE!

Send mail orders to: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144

MacMall FAX Order Line: 310-222-5800
Offer Code: D472MG14 Order Status: 800-560-6800

## We do it very fast!

*With our sophisticated order entry, computerized warehouse and Fedex® shipping system we get your order on its way the same day, so you can enjoy your purchase tomorrow!**

CREATIVE COMPUTERS

# MacMall

YOUR MAC SUPERSTORE!™

# ORDER TOLL FREE 800-222-2808

Call us for all your Apple Macintosh® Needs!

## VividQuest™

### The Best in Removable Media

Removable hard drives, including the brand new 270MB 3.5" drive that reads and writes 105MB or 270MB cartridges, or the new 200MB 5.25" drive that will read and write 44MB, 88MB or 200MB cartridges. SyQuest is the industry standard format for removable hard drive storage devices.

### SyQuest Drives

| | | |
|---|---|---|
| SyQuest 270MB External ... | $589.99 | 64243 |
| SyQuest 200MB External ..... | $599.99 | 64416 |
| VividQuest 105MB External .. | $389.99 | 61945 |
| SyQuest 88C (R/W 44) External .. | $449.99 | 61944 |

### Genuine SyQuest Cartridges

Lowest pricing on high quality removable cartridges for any compatible SyQuest® drive mechanism.

| | | |
|---|---|---|
| 270MB ..... | $79.99 | 64415 |
| 200MB ..... | $119.99 | 64417 |
| 105MB ..... | $59.99 | 61241 |
| 88MB ..... | $74.99 | 3304 |
| 44MB ..... | $64.99 | 1906 |

## Quantum

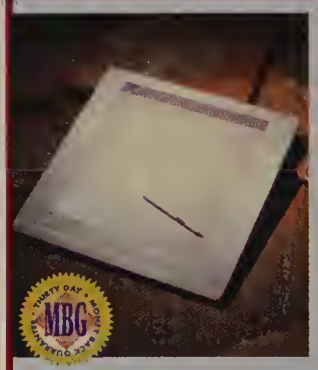
Highest quality internal and external hard drives

All Hard Drives include "FWB" Hard Drive Software

| 2.5" for PowerBook | | | | | |
|---|---|---|---|---|---|
| 170MB 17ms Int. .. | $289 | 63594 | Ext. .. | $369 | 64030 |
| 256MB 17ms Int. .. | $369 | 64039 | Ext. .. | $449 | 64040 |
| **3.5" Low Profile** | | | | | |
| 170MB 17ms Int. .. | $189 | 4356 | Ext. .. | $269 | 64035 |
| 270MB 11ms Int. .. | $299 | 63196 | Ext. .. | $379 | 64031 |
| 340MB 11ms Int. .. | $319 | 5637 | Ext. .. | $399 | 64032 |
| 540MB 10ms Int. .. | $459 | 63194 | Ext. .. | $539 | 64033 |
| 1088MB 11ms Int. | $819 | 5508 | Ext. .. | $899 | 64034 |
| **3.5" Half-height Drives** | | | | | |
| 1225MB 10ms Int. | $979 | 61331 | Ext. | $1059 | 64036 |
| 1800MB 10ms Int. | $1079 | 5509 | Ext. | $1159 | 64037 |

Installation of internal drives into your machine available for $30. Inquire for more information

## WACOM



### UD-1212R Drawing Tablet

New 12" x 12" tablet is the perfect fit for any computer artist! New features include a full menu strip, 120 levels of pressure, a transparent overlay surface, a fully customizable cordless batteryless pen, and a more powerful interactive interface!

Perfect for image editing and illustration!

$529.99 62484

UD-1212R & Painter 2.0 Bundle ..... $759.99 65049

### ArtZ 6x8" Tablet

World's first high-speed ADB compatible graphics tablet. The batteryless, cordless pressure-stylus has 120 levels of sensitivity. Programmable side switch for Undo, macros or other commands. 6" x 8" work area. Plugs into ADB port.

$319.99 60962

### ArtZ and Painter 2.0

Get both a great tablet and the award winning 24-bit color Natural Media™ painting program from Fractal Design. BUNDLE 61953

$518.99

## E-MACHINES

$849 60484

### T-16 II

16" High Quality Color Trinitron Display

*Multiple resolutions from 640x480 to large screen 1152x870.*

| | | |
|---|---|---|
| SuperMac 17T ..... | $1049.99 | 60756 |
| Super Match 17XL ..... | $999.99 | 63945 |
| SuperMatch 20*T XL ..... | $2099.99 | 61371 |
| Thunder II GX 1600 ..... | $3299.99 | 64715 |
| Thunder II GX 1360 ..... | $2679.99 | 62960 |
| Thunder II GX 1152 ..... | $2164.99 | 64387 |
| Thunder/24 v3.0 ..... | $1429.99 | 55442 |
| Spectrum Power 1152 ..... | $1159.99 | 63888 |
| Spectrum/24 Series V ..... | $839.99 | 64703 |

SUPERMAC

## Farallon® PhoneNET®

BUY TWO GET ONE FREE!

Single: $22.99 50726

3-Pack: $45.98 64156

## DAYSTAR DIGITAL

### Turbo 040 Accelerators

**Turbo 040 (with FPU support)**

| | | |
|---|---|---|
| 33 MHz Turbo 040 w/128 cache ... | $829.99 | 64655 |
| 40 MHz Turbo 040 w/128 cache ... | $989.99 | 64578 |
| FastCache Turbo ..... | $174.99 | 60926 |

**Turbo 040 (without FPU support)**

| | | |
|---|---|---|
| 33 MHz Turbo 040i w/128 cache .. | $639.99 | 64654 |

### Transform your Mac into a PowerPC with Daystar's PowerPro 601 Upgrade!

- Genuine Apple PowerPC ROMs
- Simple plug-and-play operation
- Works with your current memory
- 1MB secondary cache
- Add up to 128MB of optional memory

| 66 MHz PowerPro 601 | 80 MHz PowerPro 601 |
|---|---|
| $1569.99 64213 | $2069.99 64214 |

FastCache PowerPro - 1MB Cache $529.99 64215

Offer Code: D472MG14

CREATIVE COMPUTERS MacMall YOUR MAC SUPERSTORE!

MacMall FAX Order Line: 310-222-5800

Order Status: 800-560-6800

WIDE Selection

*MacMall has it all!*

**If you're looking for a Macintosh peripheral or accessory and don't see it then give us a CALL! We do our best to carry just about everything!**

CREATIVE COMPUTERS

# MacMall

YOUR MAC SUPERSTORE!

# ORDER TOLL FREE 800-222-2808

*Call us for all your Apple Macintosh® Needs!*

## SHARP

### Sharp JX-9460PS
### 600dpi PostScript Laser Printer

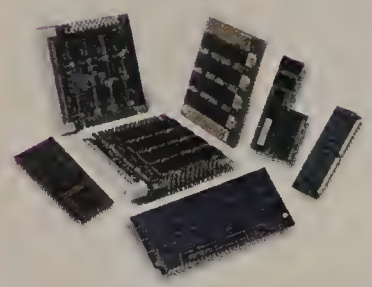
- 27 PCL5 typefaces
- Virtually silent with "sleep mode" and cuts your electric bill!
- True 600x600dpi quality printing
- Fast 6 page-per-minute printing with RISC processor
- 250-sheet paper tray
- Standard 2MB RAM, expandable to 9MB (3MB required to auto switch between HP PCL5, Epson FX, IBM Proprinter or PostScript) – works with Macs and PCs
- 35 built-in PostScript fonts

**$999.99** 64244

### Sharp JX-325
### 24-bit 600dpi one-pass color flatbed scanner

- Fast, precise scans with outstanding 300/600 dpi quality
- 24-bit color, 256 shades of grey or black-and-white scanning
- Superior color and clarity with Sharp's one-pass scanning system
- 300dpi optical resolution (600dpi Interpolated)
- Maximum scan area is 8.5x11"
- Zooming enhances mapping to a certain size
- Adjustable white balance with edge emphasis allows sharpening
- Widely used SCSI-2 Interface

**$629.99** 64245



## Call MacMall for Memory!

*For the lowest prices on memory products for your desktop Macintosh or PowerBook, call us FIRST!*

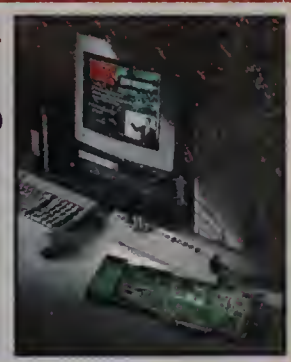
| | | |
|---|---|---|
| **8-Bit 80ns SIMMs (30 pin)** | | |
| 1x8 80ns | $44 | 2224 |
| 2x8 80ns | $75 | 60274 |
| 4x8 80ns | $155 | 2239 |
| **32-bit SIMMs (72 pin) LC III, Performa, Centris, Quadra, Power Mac** | | |
| 4 MB 80ns | $149 | 4468 |
| 8 MB 80ns | $309 | 4177 |
| 16 MB 70ns | $678 | 61271 |
| **32-Bit SIMMs (72 pin) Quadra, Power Mac** | | |
| 4 MB 60ns | $169 | 61203 |
| 8 MB 60ns | $329 | 61205 |
| 16 MB non-composite | $749 | 62424 |
| 32 MB non composite | $1,449 | 62425 |
| **PowerBook 140, 145, 170** | | |
| 4 MB | $199 | 61751 |
| 6 MB | $269 | 55471 |
| **PowerBook 160, 165, 180** | | |
| 4 MB | $179 | 60773 |
| 6 MB | $279 | 60774 |
| 8 MB | $379 | 60775 |
| 10 MB | $439 | 60776 |
| **PowerBook 165c, 180c** | | |
| 4 MB | $199 | 61383 |
| 6 MB | $299 | 61384 |
| 8 MB | $385 | 61385 |
| 10 MB | $479 | 61386 |
| **Duo (all models)** | | |
| 4 MB | $195 | 61619 |
| 8 MB | $359 | 61034 |

*Pricing on memory modules can fluctuate on a daily basis. Please call for the lowest prices.*

*$3.00 FEDEX® offer applies to continental U.S. only; orders over 10 lbs incur extra charges. Call customer service at 800-560-6800 or tech support at 800-760-0300 if you have a question or problem with any order. No packages will be accepted without a Return Authorization Number from customer service. All returned products must be in original condition with all packing and registration card, within 30 days of original invoice date. Apple, the Apple logo and Macintosh are registered trademarks of Apple Computer, Inc. While we do our best to check for mistakes, occasionally they do occur. Prices and specs subject to change without notice. © 1994 MacMall

## radius

### VideoVision Studio
### The Professional Macintosh Digital Video System

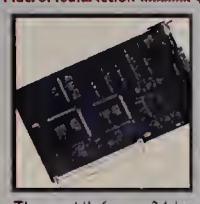


With VideoVision Studio you can record full-screen, full motion, 60-field per second, digital video input and output to and from your hard disk. It digitizes stereo audio simultaneously and stores it with the video for easier editing.

**$3649** 61326

| | | |
|---|---|---|
| VideoVision Studio Upgrade from VideoVision | $1629** | 61785 |
| VideoVision Basic | $1629** | 62146 |
| VideoVision w/Adobe Premiere & MacroMediaAction | $1979** | 61327 |

**Save $500!** When you trade up to VideoVision Studio from a qualifying competitor's board (from SuperMac, Sigma, RasterOps or New Video) through Aug. 31, 1994. Simply purchase the VideoVision Studio, send claim form, registration card, sales receipt and board being traded and you'll get a check for $500 direct from Radius. Ask your phone representative for more information and which boards qualify.



### Radius LeMans GT Display Adapter
*plus FREE NEC CD-ROM DRIVE!!*

The world's fastest 24-bit display interface for Macintosh, delivering resolutions to 1152x882 with ultra fast 32-bit QuickDraw acceleration. With 3MB of VRAM, and optimized ASICs, it performs up to 230% faster than built-in video of Quadra!

**$1999** 63788

BONUS! Direct from Radius NEC 3xe CD-ROM Drive (valid thru 8/93)

| | | |
|---|---|---|
| Radius 24xp-Pro Display Adapter | $499.99 | 62326 |
| PrecisionColor Pro 24x Accelerator (BONUS: FREE NEC 3XE CD-ROM DRIVE DIRECT FROM RADIUS**) | $1469.99 | 61769 |
| PrecisionColor Pro 24x (7") | $819.99† | 61695 |
| PrecisionColor Pro 24xk Adapter | $749.99** | 63786 |
| Radius PhotoBooster | $809.99 | 62325 |

**Offer good through 8/31/94. *Pro 24xk price after $50 Radius mail-in rebate. †24x price after $75 Radius mail-in rebate. Rebates expires 8/31/94.

## RAYDREAM

### RayDream Designer 3.0

"By far the best modeling and rendering value around..."
-MacWorld, August 1993

Try the leading 3D illustration package. It handles the details - lighting, shadows, transparency, reflections and perspective are automatic! Actually paint the most complex object in 3D!

**$244.99** 62350

### addDepth

"addDepth is the way to go!"
-MacUser, June 1993

Type, draw, and print in 3D with this award-winning application! Use built-in text and drawing tools to type and draw directly in 3D. Or import popular clip art and graphics. Add depth and perspective automatically, then personalize with colors, textures, bevels and lighting. Export your files in Illustrator, FreeHand, PICT or EPS format. A must-have for both business graphic users and creative professionals.

**$122.99** 60951

### JAG II

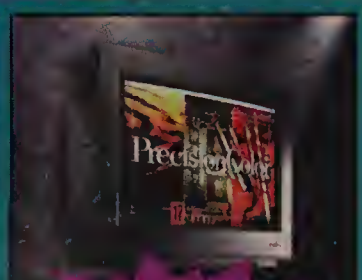
"☆☆☆☆" -Publish

This award-winning graphics utility is packed with new features. Resolution boosting eliminates the jaggies in your images or animations, especially scans and bitmaps, with a single mouse click. Supports PICT, TIFF, EPS, PhotoCD, QuickTime and more.

**$88.99** 62145

## radius
AUTHORIZED RESELLER

### Precision Color 17T



New 17" color monitor with "on-the-fly" resolution switching from 640x480 to 1152x870. Digital controls for precise settings and super sharp .25mm dot pitch give you quality you can see! Ask about the Radius worry-free service warranty!

**$959.99*** 63587

*AFTER $100 MAIL-IN REBATE
Rebate ends Sept. 30th, 1994

### IntelliColor Display/20
The Intelligent 20" Color Display for Macintosh Computers

- Vertically flat 20" Trinitron
- Resolution up to 1600 x 1200
- User-selectable color temperature
- Exclusive Worry-Free Warranty

**$1897** 61362

### Precision Color 20/V

Delivers large-screen color in resolutions from 640x480 pixels to 1152x870 pixels. With a PrecisionColor interface card, (sold separately) you can swith resolutions on the fly without closing applications or rebooting. With flicker-free resolution up to 1152 x 870, the PrecisionColor presents two full pages for design, spreadsheet, and DTP applications. Requires compatible interface card.

**$1449.99** 64111

CREATIVE COMPUTERS MacMall YOUR MAC SUPERSTORE!

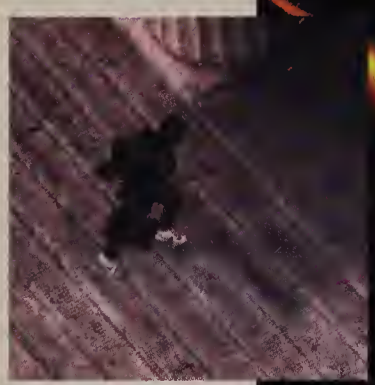
**Send mail orders to: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144**

**MacMall FAX Order Line: 310-222-5800**
Offer Code: D472MG14 Order Status: 800-560-6800

# System Security: insures your Apple®
# Protects your system in the office, at home, and even on the road.

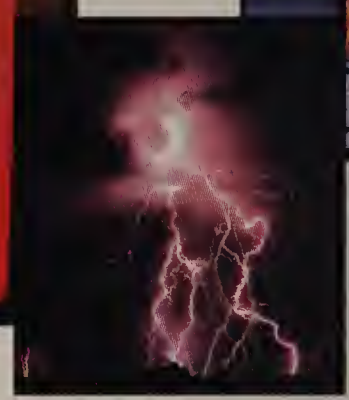
2929 N. High Street
Columbus, Ohio 43202

**SAFEWARE,**
The Insurance Agency Inc.



Theft

Power Surge



Lightning

Fire

**If you lost the use of your computer tomorrow, how would you manage?** Unfortunately, it happened to about two and one-half million users last year. Their computers were stolen, destroyed by fire or natural disasters, accidentally dropped — even disabled by sudden power surges. Unforseen mishaps that no warranty covers. Fortunately, you can now insure your valuable APPLE equipment against external loss or damage, with *System Security* from Safeware®.

**Comprehensive coverage.**
Under the *System Security* policy, your system is insured against theft, fire, vandalism, water damage, power surges, lightning, accidental damage, earthquake, flood and windstorms. No matter whether your system is in transit, at the office or at home. What's more, the policy covers repair or replacement of your equipment without depreciation.†

**You pay no deductible.**
When your premium is accepted, your system is covered for one year. There is no deductible.

**10-day free trial period.**
You can try *System Security* for 10 days and if for any reason you're not completely satisfied, Safeware will refund your premium in full.

**Why not begin your *System Security* coverage today?** It's easy! Just phone the special Safeware toll-free number listed below to purchase a one year policy on any of the equipment listed here.

## One year coverage for just pennies a day!

| DESKTOPS | 1-yr Premium |
|---|---|
| Power Macintosh | |
| Macintosh Quadra | |
| Macintosh Centris | |
| Printers & Monitors | |
| $100 to $1,000 | $39 |
| $1,001 to $2,000 | $40 |
| $2,001 to $3,000 | $60 |
| $3,001 to $4,000 | $80 |
| $4,001 to $5,000 | $100 |

| POWERBOOKS | 1-yr Premium |
|---|---|
| Apple Macintosh PowerBooks | |
| $100 to $1,000 | $39 |
| $1,001 to $2,000 | $64 |
| $2,001 to $3,000 | $96 |
| $3,001 to $4,000 | $128 |
| $4,001 to $5,000 | $160 |

| NEWTON | 1-yr Premium |
|---|---|
| Apple Newton | $52 |

**For more information or to order System Security today, call:**
**1-800-800-6132**
**Insurance Sales Only.**

**For merchandise, call**
**1-800-222-2808**

† This is a general summary of the provisions and qualifications of the insurance benefits included in the *System Security* Policy. Review the policy for complete details and disclosures. *System Security* SM is the service mark of Safeware. *System Security* is offered exclusively by Safeware and is underwritten by American Bankers Insurance Company, 11222 Quail Roost Dr., Miami, FL 33157.

† Available in the U.S. except HI. Pending approval in AR, CT, GA, IA, KS, LA, ME, MA, MI, MN, MO, MT, NE ,NV, NM, NY, NC, OK, RI, TN, VT, WI.



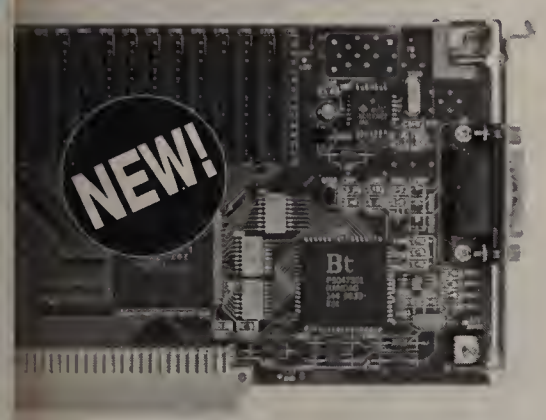
Circle 131 on reader service card

# BELOW DEALER COST CLOSE-OUTS!

Below Dealer Cost Clearance! All Radius products are *new* with full manufacturers 1 year warranty!

All quantities are extremely limited and will be sold on a first come first serve basis. Dealer costs are shown below for comparison.

Sony 17" Color Trinitron $899
*with 24-bit video card* $1198




## RADIUS PRECISIONCOLOR 24X $799

The Radius PrecisionColor 24X is the 'Best Price/Performance Value' *(MacUser)* 24-bit board on the market!

- Highly integrated 7" card design.
- $1000 plus savings vs. Thunder/24!
- 20% faster QuickDraw than Thunder/24!
- On-board QuickDraw acceleration •24-bit color
- Up to 1152 x 882 resolution •Compatible with virtually all monitors •Supports Nubus block transfer
- Multiple resolution switching 'on the fly'

## VIDEO BOARDS

| | YOUR PRICE | DEALER COST |
|---|---|---|
| Radius Universal 24XP | $299 | $456 |
| Radius Universal 24XK | $599 | $750 |
| VideoVision | $1299 | $1428 |
| SuperMac VideoSpigot | $299 | $352 |
| SuperMac Thunder 24 | $1399 | $1562 |
| SuperMac SuperView | $299 | $525 |

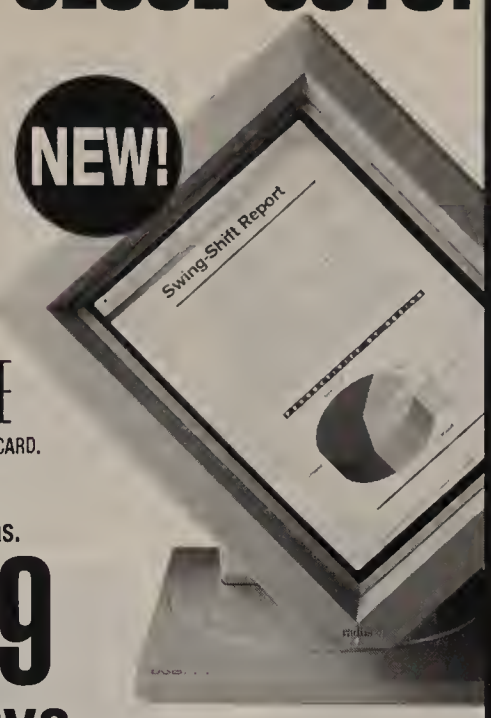
•Similar to PowerView but also does TV!

CALL FOR ALL OTHER RADIUS VIDEO BOARDS!

## POWERVIEW $199

Allows most Powerbooks and the Classic II to support color, grayscale, monochrome displays and projectors.
INTERNATIONAL VERSION $349

DEALER COST $435




## COLOR PIVOT LE

WITH PURCHASE OF CARD.
We have cards for- SE/30, LC, IIsi, Nubus, Quadras.

## $399

## DISPLAYS

| | YOUR PRICE | DEALER COST |
|---|---|---|
| Radius Color Pivot LE (see above) | $399 | $860 |
| E-Machines ColorPage 15 | $499 | $1307 |
| •15" full page color display •35% larger image area •Flat tension mask screen | | |
| Radius Grayscale Pivot | $499 | $535 |
| •Portrait and landscape orientations •Grayscale •Built-in video compatible | | |
| Full Page Display | $399 | $530 |
| •640 x 870 resolution •75 Hz refresh •Grayscale •Built-in video compatible | | |
| Radius Color Display/21 | $1899 | $1989 |
| •Compatible with Centris or Quadra built in video (16 bit on Quadra 950) •1152 x 870 resolution •True WYSIWIG mode | | |
| Precision Color Display/19 | $1499 | $1749 |
| •Compatible with Centris or Quadra built in video (16 bit on Quadra 950) •Multiple resolution switching 'on the fly' | | |
| Precision Color Display/19 with 24 bit video card | $2298 | $1749 |
| Sony 20" Color Trinitron | $1899 | $2065 |
| Radius 21" Grayscale Display | $899 | $978 |
| •Grayscale •Compatible w/Centris or Quadra built in video | | |
| RasterOps 20" Color Display | $1499 | $1446 |
| RasterOps 20" ColorTrinitron | $1899 | $2209 |

## ROCKETS/ACCELERATORS

## RADIUS ROCKET 68040 FROM $599

•68040 processor •Supports up to 128 MB of standard RAM in 8 SIMM slots •QuickDraw acceleration w/Radius boards

| | YOUR PRICE | DEALER COST |
|---|---|---|
| Radius Rocket 33 MHz | $899 | $1248 |
| Radius Rocket 25 MHz | $699 | $999 |
| Radius Rocket 25i | $599 | $830 |
| RocketShare — *Multiprocessing on your Mac!* | $299 | $359 |
| 33MHz or 40MHz Upgrade *for the Quadra 950, 900, or 700* | $349 | |
| 80MHz Upgrade for PowerMac 6100/7100 *accelerate to PowerMac 8100 speed* | $299 | |

## OTHER SPECIALS!

APPLE LASERWRITER Postscript printer 8 ppm $499
Limited quantities, 600 dpi upgrades available.

APPLE IMAGEWRITER Limited quantities $149

All LaserWriter/LaserWriter Plus Parts in stock! CALL

Circle 20 on reader service card

800.375.9000

CRA SYSTEMS

## CALL FOR MAC SYSTEMS & PARTS!

### Quadra 950 - Below Dealer Cost!!

**CPUs**
AWS 95 16/230 ....4628
AWS 95 32/1G8,DAT,AS Pro ....7999
Mac Plus 1/0, Mac SE 1/20 ....299/399
Mac II 0/0, Rev B ROM ....399
Mac IIx 0/0, 800K/1.4M8 ....699/799
Mac IIcx 0/0, 800K/1.4M8 ....499/599
Mac IIci 0/0, 800K/1.4M8 ....799/899
Quadra 840AV, 900, 950, 800, 700 ..CALL
Powerbook 170 8/80 (active matrix) ..1799
Powerbook 140 4/40 ....999
All other CPUs ....CALL

**UPGRADES**
Quadra 900 to 950 ....999
Mac II to IIfx ....999
Mac SE FDHD upgrade ....349
Mac II FDHD upgrade ....399

**CARDS- Network**
Apple Token Talk 1/4-4/16 ....399/599
DCA Mac Irma 3270 ....499
DCA Mac Irma 3270 for SE30 ....499
Ethernet boards for SE/SE 30 ....99
Ethernet LC thin coax ....99
Shiva FastPath 4 Gateway ....999

**CARDS- Misc.**
8&W TV card for Nubus ....199
Apple IIe Emulation for LC ....149
Apple IIci Cache Card ....99
Apple Serial Nubus Card ....399
Daystar Nubus Ram Card ....499
Kodak Device Color Profile accel. ....1999
IIsi Nubus adapter card ....99
IIsi Daystar Dual PDS adapter ....99
Drange Micro 286 board ....199
TrueVision NuVista+ 2M8 ....1999

**CARDS- Video**
Apple 8.24 GC ....599
Apple 8.24 ....399
Apple 8 bit for 13-14" ....199
Apple Portrait/Two Page ....149/249
E-Machines Colorlink EX/T ....299
E-Machines T19 card for SE30/IIsi ..299
RasterDps 708+,8 bit for 20" ....299
RasterOps 8LC card for LC ....199
RasterDps 364 Frame Grabber ....399
RasterOps 24 xli ....1599
RasterDps 24 L with 801 ....1299
RasterDps Editing Aces ....2999
RasterDps 24 XLTV ....2399
SuperMac Spectrum 24 for 20" ....1699
SuperMac Thunder II ....2799

**DRIVES**
Apple 40M8 3.5 Internal HD ....49
Apple 5.25 External PC Drive ....49
Powerbook 20/40/80M8 ....89/129/199
Dayna 360K/1.2M8-740K/1.44M8 ....499
Exabyte 8mm 5G8 tape backup ...1599
Maxtor 800M8 WORM Drive ....999
Ricoh HyperSpace 600M8 Optical..1999

**SOFTWARE**
PageMaker 5.0 ....449
Lotus 123 ....89
4D 1.06/3.0 ....399/549
AppleShare File Server 2.0 ....299
Radar 4.0 Network Manager ....299
GraceLan 50 User Pack ....199
GraceLan Unlimited Corp. Pack ....499

**MONITORS**
Apple 12" Mono/Gray Scale ....199
Apple 15" FPD Mono/Gray Scale ....449
Apple 21" TPD Mono/Gray Scale ....999
E-Machine ColorPage15 w/8bit card ..499

**INPUT/PRINT**
Apple Scanner ....499
Abaton Flatbed 300 scanner ....399
Dest 1020 Scanner ....499
HP Scanjet ....499
Howtek ScanMaster III+ ....3999
Mirrus Film Recorder ....2999
Sharp JX 450 ....3999
Presentation Tec. Film Recorder..3495
Voice Navigator II ....499

**PRINTERS**
Apple ImageWriter I/II ....149/289
Apple ImageWriter Wide/LO ....269/449
Apple LaserWriter 8ppm PS ....499
Apple LaserWriter IInt/ntx ....799/999
AST Turbo PostScript Laser ....1399
GCC WriteMove II portable ....399
HP PaintWriter XL ....599
IBM Pageprinter II ....999
LaserMax 800, 135 fonts ....2499
Mitsubishi G370-10u 300dpi color ..1999
NEC LC890 SilentWriter ....999
Newgen Turbo PS400 ....1099
OMS ColorScript 100 m10 ....1999
OMS ColorScript 100 m30 11x17 ....4999
QMS 4M8 Upgrade, legal pack for ColorScript 100 (above) ....499
Oume Crystal Print Publisher II ....999
Oume ScripTen ....1399
Ricoh Laser 6000/ps ....999
Texas Instruments 2108 ....999

**MISCELLANEOUS**
110-1500 Watt Battery Backups .99/799
Apple LO cut sheet feeder ....149
Apple LO bin expansion ....79
Apple Universal Monitor Stand ....49

**PARTS**
Mac Plus logic, No RDMs ....99
Mac II logic Rev. 8 RDM (new) ....199
All Logic Boards ....CALL
All Power Supplies ....CALL
Mac Plus power supply ....129
SE-Analog board ....129
SE power supply ....129
1.44 FDHD Floppy (NEW) ....199
400K/800K Floppy Drive ....49/99
Apple 5.25 External PC drive ....49
Apple ADB mouse (NEW) ....59
IIcx case and power supply ....199
Mac II/IIfx case & power supply ....199
Quadra 700 case & power supply ....399
CRT and Yoke for Plus, SE ....49
All LaserWriter parts ....CALL

Over 20,000 items/parts in stock, if you don't see it — CALL US!

# 800.375.9000

**WE BUY MACS!!**
Please fax list when possible. Corporate, Government, and University PO's welcome. Prices reflect cash discounts. Mastercard, Visa, AMEX, & Discover Card accepted. Lease/Purchase financing available.

Consultants/Dealers 817.754.2131
International Sales 817.754.2120
TeleFax 817.754.2345

**CRA Systems, Inc.**
300 South 13th St.
Waco, TX 76701

1-800-CLUBMAC 1-800-258-2622 1-800-258-2622

# Hard Drives

## Quantum

### LPS 270mb Internal

ClubMac 30 DAY MONEY BACK GUARANTEE

- Fast SCSI-2
- 4,500 RPM
- 10ms access time
- WriteCache & DisCache Firmware

$259

Quantum Pro and LPS series carry a TWO Year Warranty. Go-Drives carry a ONE Year Warranty

### LPS & PRODRIVE SERIES

3.5" LOW PROFILE

| Capacity | Access | Internal | External |
|---|---|---|---|
| 85mb | 17ms | $135 | $195 |
| 170mb | 14ms | $199 | $259 |
| 270mb | 11ms | $259 | $319 |
| 340mb | 11ms | $299 | $359 |
| 540mb | 10ms | $399 | $459 |
| 1080mb | 9.5ms | $739 | $799 |
| 1440mb | 9.5ms | $909 | $969 |
| 2100mb | 9.5ms | $1239 | $1299 |

### GO•DRIVE SERIES

2.5" POWERBOOK DRIVES

| Capacity | Access | Internal | External |
|---|---|---|---|
| 170mb | 17ms | $259 | $379 |
| 256mb | 17ms | $339 | $459 |

## Seagate

ClubMac 30 DAY MONEY BACK GUARANTEE

Seagate drives carry ONE Year Warranty

| Unformatted Capacity | Model | Description | Access Time | Actual MAC Capacity | Internal | External |
|---|---|---|---|---|---|---|
| **3.5" LOW PROFILE** | | | | | | |
| 1.2GIG | ST31200N | | 10ms | 1000mb | $869 | $92 |
| **3.5" HALF HEIGHT** | | | | | | |
| 1.9GIG | ST11900N | | 9ms | 1600mb | $1199 | $125 |
| 2.4GIG | ST12400N | | 9ms | 2000mb | $1549 | $160 |
| 1.9GIG | ST11950N | *Barracuda 1* | 8ms | 1350mb | $1489 | $154 |
| 2.4GIG | ST12550N | *Barracuda 2* | 8ms | 2050mb | $1745 | $180 |
| **5.25" FULL HEIGHT** | | | | | | |
| 3.4GIG | ST43400N | *Elite-3* | 11ms | 2750mb | $2159 | $225 |
| 9.0GIG | ST4108000N | *Elite-9* | 11ms | 8600mb | $4699 | $479 |

# Removable Hard Drives

FEATURING

SyQuest® REMOVABLE TECHNOLOGY

All SyQuest drives include a TWO Year Warranty. All drives include SCSI Director formatting software, ONE FREE Cartridge, necessary cables for "plug-and-play" and documentation.

### ClubMac Removables

| | Internal | External |
|---|---|---|
| ClubMac 44mb 5.25" (SQ555) | $199 | $229 |
| ClubMac 88c 5.25" (SQ5110C) | $379 | $419 |
| ClubMac 200mb 5.25" (SQ5200) | $559 | $599 |
| ClubMac 105mb 3.5" (SQ3105) | $319 | $359 |
| ClubMac 270mb 3.5" (SQ3270) | $549 | $589 |

ClubMac 200mb 5.25"

$599

**Introducing the NEW ClubMac 200mb 5.25" Removable Drive**

ClubMac 30 DAY MONEY BACK GUARANTEE

All SyQuest cartridges cartridges include a FIVE Year Warranty.

### Cartridges

| | |
|---|---|
| 44mb (SQ400) | $ |
| 88mb (SQ800) | $ |
| 200mb (SQ2000) | $ |
| 105mb (SQ310) | $ |
| 270mb (SQ327) | $ |

# CD-ROMs

## MultiSpin 3Xp

NEC

The 3Xp combines 3X transfer rate performance, 250ms access time and a 256 KB continuous-flow cache in a compact design, making it and incredible value. At only 2.4 lbs the 3Xp is the world's lightest triple speed CD-ROM reader.

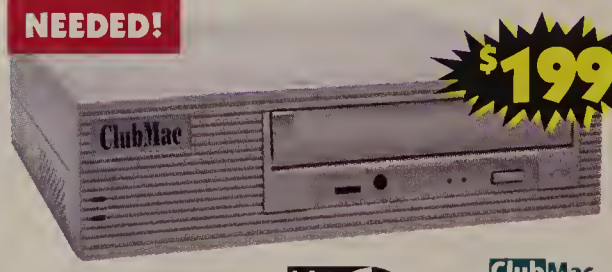
$399

### NEC CD-ROM READERS

| | w/o bundle | w/bundle |
|---|---|---|
| MultiSpin 3Xe (External, 195ms access time) | $469 | $569 |
| MultiSpin 3Xi (Internal, 195ms access time) | $439 | $539 |
| MultiSpin 3Xp (Portable, 250ms access time) | $399 | $499 |
| MultiSpin 4X Pro (External, 180ms access time) | $935 | $1035 |

NO CADDY NEEDED!

## ClubMac 2X Speed CD-ROM Reader



$199

- 320ms access time
- Double Speed performance
- Headphone jack and RCA jacks
- PhotoCD compliant

ClubMac 30 DAY MONEY BACK GUARANTEE

| | w/o bundle | w/bundle |
|---|---|---|
| ClubMac 2X Speed (Ext., 320ms access time) | $199 | $299 |

The ClubMac CD-ROM reader carries a ONE Year Warranty

## CLUBMAC CD-ROM BUNDL $800 VALUE

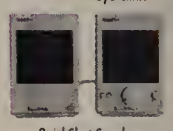
• The Animals

• Toolworks Encyclopedia v6.0

• Atlas Pack (Wo

• Maya Clinic

• Atlas Pack (US)

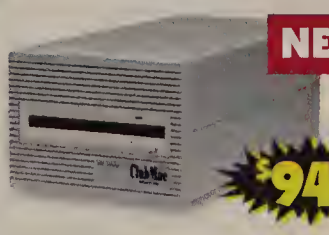


• QuickShot Speakers

• Lucas Game Pak II

# ClubMac Optical Drives

## CLUBMAC NEW 3.5" 230MB FUJITSU OPTICAL



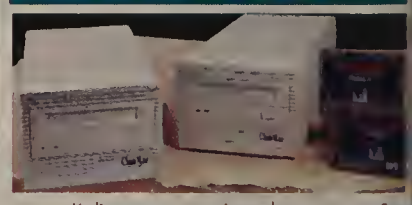
NEW!

$949

| | Access Time | Internal | External |
|---|---|---|---|
| ClubMac (M25IIA) 3.5" 128mb Fujitsu Optical | 40ms | $809 | $839 |
| Fujitsu (M25IIA-DYNAMO) 3.5" 128mb Dynamo | 40ms | | $869 |
| ClubMac (M2512A) 3.5" 230mb Fujitsu Optical | 40ms | $919 | $949 |
| ClubMac (JY-750) 5.25" 650mb Sharp Optical | 40ms | $1669 | $1699 |
| MaxOptix Tahiti III (9400) 5.25" 1.3GIG Optical | 19ms | | $2499 |
| Hewlett-Packard (C1716T) 5.25" 1.3GIG Optical External | 28ms | | $2429 |

All ClubMac Opticals include ONE cartridge and ONE Year Warranty.

# ClubMac Tape Backup



| Capacity | Model | Format | Media | Internal | Exte |
|---|---|---|---|---|---|
| 2.0GIG | ClubMac DAT | DDS | 60m, 90m | $749 | $7 |
| 2-4GIG | ClubMac DAT/DC | DDS-DC | 60m, 90m | $949 | $9 |
| 4-8GIG | ClubMac DAT/2 | DDS-2 | 60m, 90m, 120m | $1329 | $13 |
| 2.0GIG | HP DAT | DDS | 60m, 90m | $949 | $9 |
| 2-4GIG | HP DAT/DC | DDS-DC | 60m, 90m | $1109 | $11 |
| 4-8GIG | HP DAT/2 | DDS-2 | 60m, 90m, 120m | $1379 | $14 |

ClubMac DAT and DAT/DC drives include Retrospect v2.0 Backup Software, ONE 90 Meter Tape and a TWO Year Warranty. HP DAT drives carry a ONE Year W
The ClubMac DAT/2 & HP DAT/2 drive includes Retrospect Remote v2.0 (3-Pack) Network Backup Software, ONE 120 Meter Tape and a ONE Year Warra

# CLUBMAC 20" TRINITRON MONITOR BLOWOUT

## Monitors & Graphic Cards

# radius

### RAPHIC CARDS

MonsGT (0447) ..... $1949
ecisionColor Pro 24X (0429) ..... $1349
ecisionColor Pro 24XK (0430) ..... $699*
ecisionColor Pro 24XP (0431) ..... $449
ecisionColor 24X (0421) ..... $824†

### ULTIMEDIA

deoVision Studio (0418) ..... $3389
deoVision Studio Upgrade (0419) ..... $1499
deoVision Studio Basic (0416) ..... $1549

### ONITORS

ecisionColor/21 (0463) ..... $2049
telliColor Display/20 (0381) ..... $1879
ecisionColor Display/20v (0427) ..... $1679
ecisionColor Display/17 (0460) ..... $999**
vot Display (0356) ..... $565
ll Page Display/gs (0424) ..... $489
PD20gs (0436)/21gs (0437) ..... $799/$989

After MFR $50.00 rebate, † After MFR $75.00 rebate
After MFR $100.00 rebate. Offers expire 08/31/94

**IntelliColor Display / 20**

**ClubMac Blowout Price is... $1879**

**Purchase one of the following**

**PrecisionColor Pro 24X** $1349

or

**LeMansGT NEC MultiSpin 3Xe** $1949

Get a "FREE" CD-ROM READER a $469 value

**It's time to trade up for VideoVision Studio!**

**SAVE $500***

For a limited time, you can trade in your digital video board and get $500.00* from Radius when you purchase a VideoVision Studio video board.

*Offer good only with the purchase of a Radius VideoVision Studio. Mail qualifying video board, VideoVision Studio warranty registration card and a copy of your sales receipt to Radius. Offer ends 08/31/94

# SUPERMAC™

**WE HAVE THEM IN STOCK!**

**When you purchase the following products...** $200 REBATE

**SuperMatch 20TXL** + **Thunder/24 v.2.0**

$1949 + $1429

You also get Free DSP upgrade $599 value

**Bundle:**
$1949 SuperMatch 20TXL
$1429 Thunder/24
$3378
- $200 SUPERMAC REBATE
**$3178**
Offer ends 8/31/94

### 24-BIT GRAPHIC ACCELERATORS

Thunder II GX•1600 (1600 x 1200) ..... $3349
Thunder II GX•1360 (1360 x 1024) ..... $2689
Thunder II GX•1152 (1152 x 870) ..... $2169
Thunder/24 v.2.0 (G1130) ..... $1429
Spectrum Power • 1152 (G3430) ..... $1169
Spectrum/24 Series V (G3930) ..... $839

All SuperMac products carry the SuperCare Plus Warranty (Overnight replacement for ONE Year). SuperMac graphics and digital - video cards carry a FIVE Year Warranty.

### LARGE SCREEN DISPLAYS

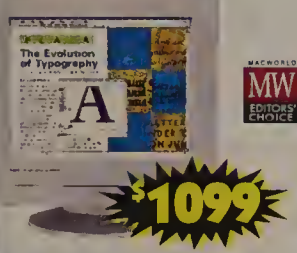
SuperMatch 21•T XL Trinitron (ST02102) ..... $2199
SuperMatch 20•T XL Trinitron (ST09752-XL) ..... $1949
SuperMatch 17XL (STD1701) ..... $999
Platinum 21 Two-Page GS (ST09761) ..... $999
PressView 21 Display System ..... $3349

### MULTIMEDIA SOLUTIONS

Digital Film (OV20SO) ..... $3199
Spigot II Tape (OV1530) ..... $849
Video Spigot NuBus (OV1030) ..... $369
Video Spigot LC (OV10SO) ..... $249

# NEC

**7" MultiSync 5FGp**



$1099

### MONITORS

15" MultiSync 3V (JC-1535VMA) up to 1024 x 768 ..... $469
15" MultiSync 4FGe (JC-1531VMA-3) up to 1024 x 768 ..... $629
17" MultiSync 5FGe (JC-1731VMA-3) up to 1024 x 768 ..... $989
17" MultiSync 5FGp (JC-1741UMA-3) up to 1280 x 1024 ..... $1099
21" MultiSync 6FGp (JC-2141UMA-3) up to 1280 x 1024 ..... $1999

NEC Monitors carry a THREE Year Warranty.

### PRINTERS

Silentwriter 640 6ppm, 300 dpi, 52 fonts, PS Level 2 ..... $719
Silentwriter 1097 10ppm, 600 dpi, 35 fonts PS Level 2 ..... $1379

The Silentwriter 640 carries a Limited TWO-Year Overnight Replacement Warranty
The Silentwriter 1097 carries a ONE Year Warranty

# RASTEROPS® CORPORATION

### MONITORS

20T MultiScan Trinitron (207SR0) ..... $1929
20/20 Multimode Color (2020C) ..... $1539
ClearVue Color 17 ..... $869

### GRAPHIC CARDS

PointBoard Lightning (2685) ..... $779
PointBoard Turbo XL (269S) ..... $1119
Horizon 24 (2678) ..... $2239

### MULTIMEDIA

24STV (2536)/24XLTV (2548) ..... $729/$2598
MoviePak (2690)/ Movie Pak2 (2676) $519/$1479
MoviePak2 Pro Suite (2692) ..... $3359
Video Expander II (2826) ..... $499

### DUOMATES

DuoMate 16sc (2659) ..... $529

**"Sure Thing"™ Service Program**

Under the "Sure Thing"™ service program, RasterOps will provide customers with next-day replacement of a faulty or defective add-on board or display product for the first year of ownership.
*To be eligible for the program, customers must be the original purchaser of the product, send in a warranty registration card and show proof of purchase*

## Printers

**IP LaserJet 4ML Printer**

$1029

100-dpi
15 PostScript fonts • 4ppm
1MB standard memory
ONE Year Warranty
• Fast Intel 80960 18.8 MHz RISC processor
• PostScript Level 2

**HEWLETT PACKARD** *Authorized Dealer*

*HP DeskWriters carry a THREE Year Warranty. HP DeskWriter 310s carry a ONE Year Warranty HP LaserJets carry a ONE Year Warranty.*

HP DeskWriter 310 Printer 300 x 300 dpi, 3ppm, Color Kit Available ..... $299
HP DeskWriter 310 Printer with Cutsheet Feeder, Color Kit Available ..... $369
HP DeskWriter 520 Inkjet Printer 600 x 300 dpi, 3ppm, 35 fonts ..... $299
HP DeskWriter 550C Inkjet Printer 300 x 300 dpi color, 3ppm, 35 fonts $479
HP DeskWriter 560C Inkjet Printer 600 x 300 dpi color, 3ppm, 35 fonts $579
HP LaserJet 4ML Printer 300 x 300 dpi, 4ppm, 35 scalable fonts ..... $1029
HP LaserJet 4MP Printer 600 x 600 dpi, 4ppm, 35 scalable fonts ..... $1395

## Input Devices

$499

**UD Series Graphic Tablets**

# WACOM

ARTZ 6x8 ADB Tablet ..... $299
UD 12x12 Standard Tablet ..... $499
SD 12x18 Electrostatic Tablet ..... $1029
SD 12x18 Standard Tablet ..... $959
SD 18x25 Standard Tablet ..... $2579

## Acceleration

### POWERPC PRODUCTS

6 MHz PowerPro 601 (000728) ..... $1499
0 MHz PowerPro 601 (000735) ..... $1999
astCache PowerPro-1MB Cache (000742) ..... $499

### TURBO 040 ACCELERATORS

**urbo 040 (with FPU support)**
3 MHz Turbo 040 w/128K cache (000773) ..... $799
0 MHz Turbo 040 w/128K cache (000797) ..... $959
astCache Turbo (000223) ..... $165

**urbo 040i (w/o FPU support)**
3 MHz Turbo 040i w/128K cache (000780) ..... $629

# DAYSTAR DIGITAL

### APPLICATION ACCELERATORS

Image 040 (Quadra/Centris) (000414) ..... $1549
Quad 040 w/128K cache (Quadra/Centris) (000056) ..... $959

### POWERCACHE

without FPU / with FPU

33 MHz PowerCache (P31UV-033) ..... $275 / $359
50 MHz PowerCache (P31UV-050) ..... $415 / $539
PowerCache Adapter* ..... $99

* Not req'd for IIci, IIvi, IIvx, Performa 600

## Scanners

**EPSON** **ES-800C Pro Mac**

*FREE ASTOUND 1.0 & $50 Rebate with the purchase of an EPSON ES-800C
* Offer applies after Mail-in, MFR $50.00 Rebate Offer Ends 7/31/94

$1199

ES-800C Pro-Mac Up to 1600dpi, PhotoShop 2.5, ScanTastic, KAI's PowerTools $1199
ActionScanning-Mac Up to 1200dpi, PhotoShop 2.5 LE & ScanTastic ..... $799
Transparency Unit (8813021) ..... $749

**MICROTEK** *Better Images Through Innovation*

ScanMaker IIG with Fractal Design Sketcher 1.0 $489
ScanMaker IISP with Photoshop 2.5 LE ..... $799
ScanMaker IIHR with Photoshop 2.5 ..... $1089

## Modems

### GLOBAL VILLAGE

TELEPORT / POWERPORT

Mercury 19,200, V.32 Turbo ..... $329 / $295
Gold 14,400 V.32 bis ..... $279 / $235
Silver 9600, V.32 ..... $255 / $235
Bronze/Bronze II 2400, 4800, 9600 Fax ..... $95
OneWorld Fax Server 1 Line/AppleTalk ..... $865
OneWorld Fax Server 2 Line/108T ..... $1299

### SupraFAXModem

SupraFaxModem 14.4 LC V.32bis, V.42bis w/FAXstf & Micra ..... $159
SupraFaxModem 14.4 V.32bis, V.42bis w/FAXstf & Micra ..... $225
SupraFaxModem PB 14.4 V.32bis, V.42 Int. for Powerbook ..... $225
SupraFaxModem 28.8 V.Fast Class ..... $319

## Networking

OTHUB/12 10BT Hub w/12 10T, Thk & Thn ports ..... $465
OTHUB/8 10BT Hub w/8 10T, Thn port ..... $229
Mini EN/SC Thn/10BT SCSI Ether w/DT& PB cable ..... $297
Mini EN/SC10T 10T SCSI Ethernet w/DT & PB cable ..... $237
IETEXT-FN AAUI Hub w/4 RJ45 ports ..... $179

# ASANTÉ

FNTNA 10BT or Thin FriendlyNet Media Adapter ..... $65
MC+IIE64 Mac II & Perf 600, Thk/Thn, 64K ..... $139
MAC+IIET64 Mac II & Perf 600, Thk, 10BT, 64K ..... $139
MC3NB Mac II & Perf 600, Thk/Thn/10BT, 64K ..... $189
AP1001 AsantePrint, Thk/10BT or Thk/Thn ..... $329

Warranties: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. Money Back Guarantee: All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. Returns: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused. All product information and prices are subject to change without notice. Not responsible for typographical errors.

**No Surcharge!**

60

# ClubMac

**1-800-258-2622**

Info (714)768-8130 • Tech Support (714)768-1490
Fax (714)768-9354 • 7 Hammond, Irvine, CA 92718

MacWorld August 1994

1-800-258-2622 1-800-CLUBMAC 1-800-258-2622

Circle 96 on reader service card

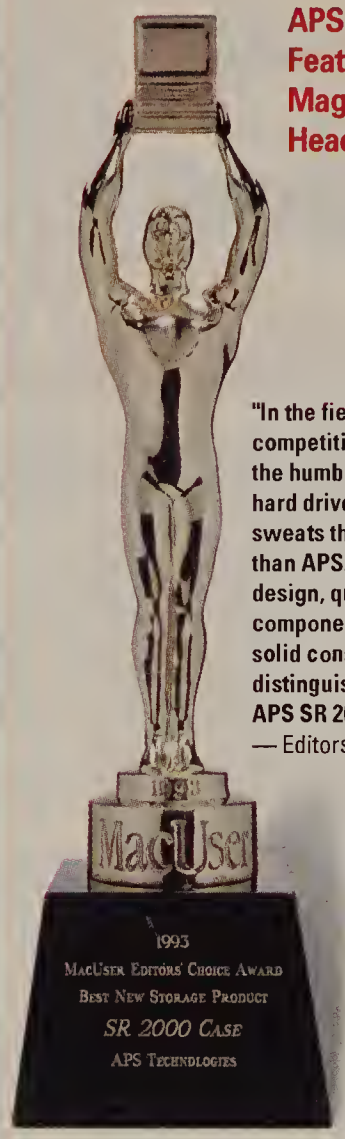
Best Technical Support

1994 Consultants Choice Awards • Macintosh Consultants Network

Great Products. Priceless Support!

# An APS Breakthrough...

## APS Announces New Drives Featuring IBM's Breakthrough Magneto-Resistive *mr* Head Technology




"In the fiercely competitive world of the humble desktop hard drive, nobody sweats the details more than APS. Elegant design, quality components, and rock-solid construction distinguish the compact APS SR 2000 Case."
— Editors of MacUser

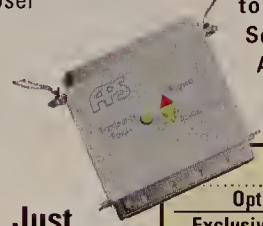
## APS *I*^mr^ 1.0 $699*

### The New APS *I*^mr^ 1.0 Gig

The new high-capacity, value leader, the APS I 1.0 also promises to be the reliability leader as a result of its IBM 0662 mechanism's incredible 800,000 hr MTBF and five-year warranty. Employing IBM's Magneto Resistive head technology, the APS I 1.0's low power requirements enable internal compatibility across a variety of Mac platforms, yet provides 1003MB of impressive performance with seek times as low as 13.3 ms and sustained transfer rates as high as 3.3MB per second. A great match for Mac Centris models through the PowerMacs, external versions of the APS I 1.0 in our SR 2000 enclosure are compatible with virtually all Macs from the SE through the PowerMac.

## SCSI Sentry™

Now you can "stop SCSI Voodoo" on your SCSI Chain, even when you're not ready to buy a new drive. Our new SCSI Sentry™ gives you all the benefits of APS' acclaimed DATerm technology in the form of an external SCSI performance monitoring instrument.



Just $99

| Benefits | SCSI Sentry |
|---|---|
| Optimizes Overall SCSI Performance | ✓ |
| Exclusive Digital Active Termination | ✓ |
| Provides Ideal Termination Power | ✓ |
| Drastically Reduces SCSI Retries | ✓ |
| Regulates SCSI Line Voltage | ✓ |
| Solves Bus Impedance Issues | ✓ |
| LED Activity Indicators Diagnostic Tool | ✓ |
| Easy Installation: Takes Seconds | ✓ |

## SR 2000 StacKIT™

Only! $24

- End Cable Bondage Forever!
- Minimize SCSI Chain Length
- Heavy Metal Shielding Protects SCSI Signal
- StacKIT Includes Four Concave Stacking Feet
- StacKIT Includes Exclusive APS SCSI C "Connector"

## APS HARD DRIVES

For your Mac or Power Mac

### 163MB - 1029MB

| Model | Capacity | Internal | SR2000 |
|---|---|---|---|
| APS Q 270[2] Quantum LPS270 mechanism | 257MB | $259 | $359 |
| APS *I*^mr^ 270[2] IBM DSAS 3270 mechanism | 260MB | 259 | 359 |
| APS MX 290[2] Maxtor 7290 mechanism | 276MB | 249 | 349 |
| APS MX 345[2] Maxtor 7345 mechanism | 324MB | 329 | 429 |
| APS 340[2] 340 mechanism | 327MB | 279 | 379 |
| APS *I*^mr^ 360[2] IBM DSAS 3360 mechanism | 342MB | 299 | 399 |
| APS Q 525[2] Quantum 525 mechanism | 516MB | 379 | 479 |
| APS *I*^mr^ 540[2] IBM DSAS 3540 mechanism | 522MB | 399 | 499 |
| APS Q 540[2] Quantum 540 mechanism | 516MB | 399 | 499 |
| APS *I*^mr^ 730[2] IBM DSAS 3720 mechanism | 700MB | 499 | 599 |
| APS MS 1.2AV[5] Micropolis 2210AV mechanism | 965MB | 759 | 859 |

### 1612MB - 2845MB

| Model | Capacity | Internal | SR2000 |
|---|---|---|---|
| APS MS 1.2[5] Micropolis 2210 mechanism | 1001MB | $699 | $799 |
| APS *I*^mr^ 1.0[5] IBM 0662 mechanism | 1003MB | 699 | 799 |
| APS MS 4110[5] Micropolis 2210 mechanism | 1002MB | 699 | 799 |
| APS Q 1080[2] Quantum 1080S mechanism | 1029MB | 749 | 849 |
| APS MS 1.7AV[5] Micropolis 2217AV mechanism | 1612MB | 999 | 1099 |
| APS MS 1.7[5] Micropolis 2217S mechanism | 1682MB | 929 | 1029 |
| APS *I* 2.0[5] IBM 0664 mechanism | 1920MB | 1299 | 1399 |
| APS ST 2.0[5] Seagate ST 125500N Barracuda mech. | 2040MB | 1679 | 1779 |
| APS MS 2.4G[5] Micropolis 1926 mechanism | 2100MB | 1349 | ✱1549 |
| APS MS 3.0G[5] Micropolis 1936 mechanism | 2845MB | 1999 | ✱2199 |
| APS ST 9.0[5] Seagate ST410800N mechanism | 1611MB | 4149 | ✱4349 |

*Internal drives for Quadra 800 and Centris 610 available.*
*DATerm patent pending*
*Copyright © 1994 APS Technologies*

*1-5 Denotes length of manufacturer's warranty*
*✱ External Case is Special Full Height Only*
** Internal Price Listing*

### POWERBOOK DRIVES

| Model | Capacity | LW Pro 630 | Internal | Companion II AC/DC |
|---|---|---|---|---|
| APS PB 85[1] | 80MB | $249 | — | — |
| APS PB 170[1] | 160MB | 319 | $269 | $419 |
| APS T 213[1] | 202MB | 319 | 269 | 419 |
| APS PB 250[1] | 240MB | 359 | 309 | 439 |
| APS T 340[1] | 324MB | 549 | 499 | 649 |
| APS T 520[1] | 500MB | 699 | 649 | 799 |

### PORTABLE STORAGE

*The Perfect Home for your 2.5" PowerBook Drive.*

| Companion II Enclosures | AC | AC/DC |
|---|---|---|
| Enclosure | $89 | $139 |

Amazing price on the new APS T 520 Companion II Drive in our SR 1000 enclosure featuring DATerm

$799

4 Hour Battery!

# APS Technologies

1-800 874-1428

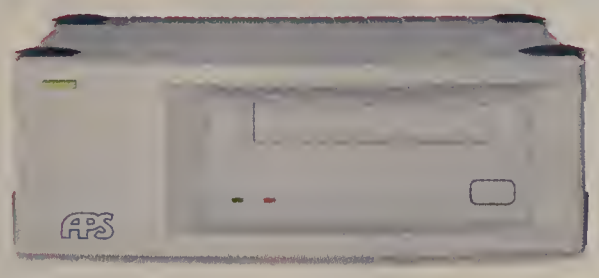
MACWORLD MW SERVICE HERO

# Get the Best: APS DAT

All APS Drives Are Power PC Mac Compatible! **YES!**

**Only APS DATs bring you all the benefits of our SR 2000 enclosure with DATerm, Digital Active Termination**
***At New Low Prices***

**APS HyperDAT™ $1199**



## APS HyperDAT

If you need high-speed backup (not the kind that ties your server up and slows down your network), you need the DDS-2 power of the APS HyperDAT! Back up locally at rates as high as 28MB per minute! Pack up to 10GB on a single tape! Best of all, your regular DDS and DDS compression tapes can be read in the APS HyperDAT, too!

## APS DAT

The amazing APS DAT offers you great performance and reliability. Get up to 2.0GB on a 90 meter tape with backup speeds as high as 10MB per minute.
*All APS DATs Include Retrospect, a $139 Value, Free!*

Mac USER LABS ★★★★

**APS DAT $799**

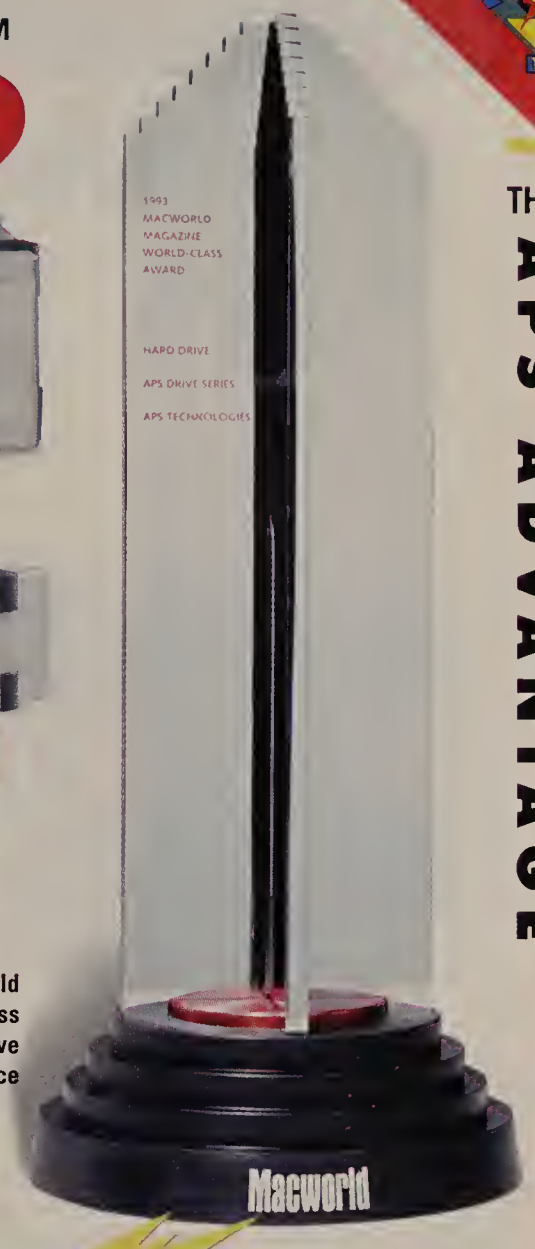
### DAT

| Model | Capacity* | Internal | SR 2000 |
|---|---|---|---|
| APS DAT[2] | 1.8-2G on 90m tape | $749 | $799 |
| APS Turbo DAT[2] | 4-5G on 90m tape | 949 | 999 |
| APS HyperDAT[1] | 8-10G on 120m tape | 1149 | 1199 |

**Actual data compression and tape capacity vary greatly depending on the type of data recorded, other system parameters and environment.*

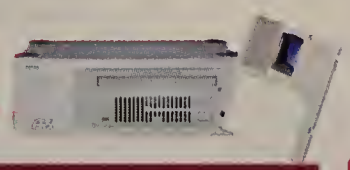
| *DAT Media (Units)* | *1-4* | *5-19* | *20+* |
|---|---|---|---|
| *60 meter DAT Tapes —* | *$10* | *$9.50* | *$8.50* |
| *90 meter DAT Tapes —* | *12* | *11.50* | *10.50* |
| *120 meter DAT Tapes —* | *23* | *22.50* | *21.50* |

*All APS DAT Drives Include Retrospect by Dantz & 1 FREE DAT Tape*

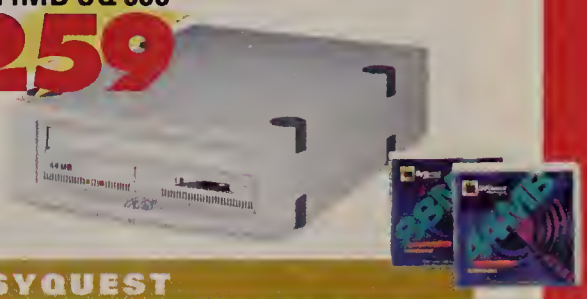



**1993 Macworld Magazine World Class Award - APS Hard Drive Series Readers' Choice**

MACWORLD MW EDITORS' CHOICE



**APS 44MB SQ 555 $259**



### CD ROM DRIVES

| Model | SR 2000 |
|---|---|
| APS T 4101 | $299 |
| APS T 3401 | 439 |

### MAGNETO OPTICAL

| Model | Internal* | SR 2000 |
|---|---|---|
| APS 128MB MO[1] | $659 | $759 |
| Mechanism is Epson/Olympus Magneto-Optical OMD-5010 | | |
| APS 230MB MO[1] | 999 | 1099 |
| Mechanism is Epson/Olympus Magneto-Optical OMD-230 | | |
| APS 1.3G 5.25" MO[1] | — | 2499 |
| Mechanism is Sony-Optical SMO F521-00 | | |

*All MO Drives Include 1 FREE Cartridge*
*128 MO cartridge — $45 unformatted, $50 formatted*
*230 MO cartridge — $60 unformatted, $65 formatted*
*512 KB/S MO cartridge — $123 unformatted*
*1024 KB/S MO cartridge — $123 unformatted*

### SYQUEST

| | | |
|---|---|---|
| APS SQ 555[2] | 44MB | $259 |
| APS SQ 5110c[2] | 44/88MB† | 429 |
| APS SQ 3105[1] | 105MB | 329 |
| APS SQ 3270[1] | 270MB | 539 |

*† Does not format 44MB cartridges*
*All SyQuest Drives Include 1 FREE Cartridge*

| *SyQuest Media* | *1-4* | *5-19* | *20+* |
|---|---|---|---|
| *44MB cartridge —* | *$59* | *$58* | *$57* |
| *88MB cartridge —* | *100* | *98* | *97* |
| *200MB cartridge —* | *100* | *90* | *97* |
| *105MB cartridge —* | *59* | *57* | *56* |
| *270MB cartridge —* | *95* | *93* | *92* |

*Listed prices are unformatted.*

### POWERBOOK STUFF

**APS SCSI DOC w/ PowerMerge Lite** $39
*Palm-Sized 25–30 PowerBook SCSI Adapter that includes a docking adapter for PowerBook and termination power indicator. Receive Power-Merge Lite Free with every APS SCSI DOC!*

**APS SCSI BOY** $19
*Rugged Palm-Sized 25–30 PowerBook SCSI Adapters*

**APS PowerBalls** *(4 Pack)* $9.99
*Brighten up that dull granite with a colorful APS PowerBall. Manufactured to the same exacting specifications as the Apple original, the APS PowerBall lets you customize your PowerBook® environment.*

THE APS ADVANTAGE

- 30-Day MBG
- Toll-Free Support
- Awesome Warranties
- Factory Direct Quality
- Rapid Repair Return
- 24-Hour Product InfoFax

**APS INTERNATIONAL**
**Global Storage Resource**
APS Intl. Sales Line (816) 920-4109
On parle français au (816) 920-4135
Se habla español en (816) 920-4136
Si parla l'italiano in (816) 920-4137
Wir sprechen Deutsch (816) 920-4138
どうぞご遠慮なく日本語のファックスでもお申込み下さい。
24-Hour Intl. Fax: (816) 483-3077

International Sales

M–F 6AM–12Midnight CST. SAT & SUN 9AM–9PM CST.
For a Free Catalog, call APS Sales: (800) 874-1428, InfoFax: (800) 374-5802

TeleCheck Same day shipping for personal checks ( Restrictions apply )

VISA MasterCard DISCOVER NOVUS

Visa, Master Card, Discover, American Express: No Surcharge.

• 30-day money-back guarantee • (Excluding opened software) Your risk is the cost of shipping
• Drive-for-Drive Repair or Replacement Warranty • The warranty length is denoted by the superscripted number next to each drive model. APS will, at its discretion, replace or repair products found to be defective according to the terms of the product's warranty
• All prices and specifications are subject to change without notice
• Refused orders subject to restocking fee
• Hard drives include brackets, cables, cords and LEDs required for operation with the specified Macintosh -where applicable All hard drives from APS Technologies come preformatted with Apple's System 7.0.1 software, at least 9 MB of compacted publicly-distributable software, and APS Technologies' APS POWER TOOLS SCSI formatter/hard disk partitioner
• All external drive products and cases come with a premium 25 x 50 SCSI cable Companion II drives, (not cases) include a 30 x 50 PowerBook SCSI cable
• International customers must pay for all shipping charges.
• Toll-free technical support as needed. Regular hours are 6 am to 8 pm Monday thru Friday 9 am to 5 pm Saturday, Central Time

APS Technologies 6131 Deramus
Kansas City, MO 64120

# 1-800 874-1428

OPEN 7 Days a Week

APS Technologies
Great Products. Priceless Support!

Circle 62 on reader service card

# We're not like the other

# We go the extra

## Macintosh™ Systems

Whether you need a system for high-end color publishing, professional pre-press applications, desktop design and production or simply business productivity – Express Direct can custom configure a Mac System that's right for your specific job and right for your budget.

And remember, all Macs aren't created equal! At Express Direct we do more than take orders and ship boxes. We install the memory, video card and system software. Then we test every System – so all you need to do is plug it in! And only Express Direct gives you Toll-Free Technical Support with every Mac!

**$5,149**

***Power Macintosh 8100/80 AV with CD ROM Drive***
*16MB RAM, 500 MB HD, includes Ethernet & FPU.*
*• Add SuperMac 21TX•L with Thunder /24 with DSP, 24-bit graphics accelerator, Extended Keyboard & System 7.1.*
*Complete System Price $9299*

Power Macintosh™
PowerPC™ Talk to an expert.

**Call**

newgen

*The new high-resolution, full tabloid bleed Newgen **Imager Plus 12** produces 1200 dpi, 12x19" camera-ready output. Also available is the 800 dpi, letter size **Newgen 880p, $1849***

Newgen's superior engineered products bring high-resolution, "service-bureau-like printing" to the personal printer. Newgen's proprietary Image Enhancement Technology produces incredibly crisp output normally found in printers at twice the price. And patented Auto Recognition Technology allows all Newgen printers to be attached to multi-platform networks for maximum flexibility and compatibility.

b **$2199**

a **$1399***

*(a) SuperMac **Thunder /24 with free DSP**, "the fastest 24-bit card" & (b) the award winning **21•TXL**, 21" Trinitron display. *Price after $200 rebate. Call for details.*

SUPERMAC™

For color publishing & pre-press, nobody delivers more power and performance than SuperMac. SuperMac's 24-bit graphic accelerators constantly sweep MacWorld magazine's top 3 ratings for the fastest cards on the market. SuperMac's large screen displays are tailored to the demands of the graphics professional.

**$2779**

*Get true RAID performance on any NuBus Mac with the potent combination of FWB's 2.0 GB **SledgeHammer 2000 FMF NuBus** and FWB's **SCSI JackHammer** accelerator card.*

FWB incorporated

FWB produces the industry's broadest range of affordable, high-performance disk array storage subsystems. Choose the solution that's best for you from the SledgeHammer family of disk arrays, which now includes the top performing SledgeHammer II and SledgeHammer Wide. No matter which Macintosh you have, you'll benefit from the unsurpassed professional performance of an FWB disk array. Power Macintosh compatible.

We stock a complete line of quality products from all of the above manufacturers & more.

# 1-800-765-0020

Express Hours (CST) M-F 8am-7pm, Sat 10am-2pm • 24hr Fax • Customer Service Hotline: **1-800-236-3059**

Get it Direct!

Apple, the Apple logo, Macintosh, Macintosh Quadra and Power Macintosh are trademarks of Apple Computer, Inc. Prices are subject to change without notice. A 2% surcharge applies to American Express purchases. All returned orders may be subject to a 15% restocking fee plus return shipping. Call for RMA before returning. Software, unless defective, cannot be returned after it has been opened. All warranties on Macintosh or Apple brand products sold by Express Direct will be honored by Express Direct or its authorized agents only. All other manufacturers' warranties still apply. *Extended Service Plans are optional and available for an additional cost. Call for complete details.

# mail order companies.

# mile for you.

## We'll give it to you straight.

When it comes to product knowledge and understanding the needs of graphic professionals – **nobody even comes close to Express Direct**. Not the other mail-order companies, not the superstores, not even your local dealer.

When you call us - **you'll talk with an expert**. Someone who's done their homework, knows the product, knows what they're talking about. Not an order-taker, like you get with the other mail-order companies.

We carry only top-notch products from the industry's best manufacturers. No garbage. You demand quality and so do we. What's more, our strict criteria for selecting products means we always get the lowest price – directly from the manufacturer. So **nobody can give you a better value** than Express Direct.

But that's just the beginning. With customer service and technical support that's the best in the industry, we make it our business to take care of you. All this is just a free phone call away. So, call Express Direct today. **You're going to love working with us!**

a **$969**

b **Call**

*Performance and Value: FOCUS Enhancements razor-sharp **Lapis 17t** (a) & the most affordable accelerated 24-bit color interface (b).*

FOCUS enhancements

FOCUS Enhancements' Lapis T17 is without a doubt the best value available today. Offering an unmatched combination of performance and price, this 17" Trinitron gives you sharp, brilliant color in 4 resolutions. Add the accelerated 24-bit color card, and you've got all the features and speed at half the price of all the comperable systems. Now you can have the performance you demand at a price you can afford.

**$1199**

*The Umax **UC1260** offers incredibly accurate 1200 dpi scanning in 1 to 24-bits of color. Shown with optional transparency adapter.*

UMAX

From affordable 24-bit color at under $900, to top-of-the-line, 1200 dpi performance, Umax offers a scanner for every need and budget. With Adobe Photoshop for image editing and manipulation and an optional transparency adapter for scanning slides and transparencies, Umax scanners bring professional power to the desktop!

800

• Unlimited toll-free technical support

FULL WARRANTY COVERAGE

• Full warranty coverage

AUTHORIZED

• Authorized service & sales

• Flexible payment & leasing terms for those who qualify

International Orders Shipped Daily

**Fax:** 312.549.6447 **Ph.:** 312.549.0030

express direct

1801 W. Larchmont Ave.
Chicago, IL 60613

Circle 81 on reader service card

# MacWAREHOUSE®

## MiniCad 5 – Performance leader for Mac CAD!

The multi-award-winning price/performance leader for Mac CAD contains 2D, 3D, a database/spreadsheet and a macro language. Includes FREE integrated modules for: Architects, Mechanical Engineers, Designers. Customizable menus and palettes, a ClarisCAD conversion kit, and more. *Your practical, precision CAD solution!*

Item# CAD 0048
**$569**

## Blueprint 5 – Power Mac version included!

Blueprint is professional 2D drafting at an unbeatable price, providing all the tools you need to do precise, high-quality 2D CAD. This award-winning software now ships with Power Macintosh and regular Mac versions in each program! Features include: auto-dimensioning, tolerancing, unlimited layers, auto-wall tool, polylines, DXF translator, and more. *Publisher:* Graphsoft

Item# CAD 0050
**$199**

## UPGRADE NOW!!

### Adobe Illustrator™ 5.5

Great new features! Plus, upgrade from 5.0 and get FREE Adobe Acrobat Exchange & Distiller, 220 typefaces and a BONUS CD-ROM filled with more typefaces, clip art, Adobe Collector's Edition 1 & 2, Illustrator Gallery artwork, and MORE! Illustrator 5.5 Full product: Ask for item# GRA 0772 $389. *Publisher:* Adobe

**Only $99!**

Ask for Upgrade Item# UPG 0085

## HEWLETT PACKARD BLOWOUT!

This personal inkjet HP Deskwriter model #2279A printer gives you superior, water-resistant, 300 dpi black printing on plain paper. Print up to three pages per minute, with 35 built-in fonts, and 256 levels of grayscale for great graphics.

Ask for item# INP 0318

**Now only $199!**

## Revise & Convert!

### DocuComp II 1.07

Revise documents with ease! Compare files, scroll through them in synch, merge them, jump back and forth and much more!

Item# DTP 0081
**$119**

### Word For Word 6.0

Award-winning program converts over 100 DOS, Windows and Mac formats. Retain features, convert characters and graphics in up to 3 pages per second!
5-User: COM 0231 $239 *Publisher:* Mastersoft

Item# COM 0226
**$99**

## The Far Side Screen Saver

Gary Larson's The Far Side has been saving your day with laughter for years, and now it can do the same thing for your monitor. 14 modules in all! Works with Intermission and After Dark.
*Publisher:* Delrina

Item# UTI 0538
**$27**

## ASD Security Trio!

### Get TrashGuard, FileGuard & FileDuo

**ALL 3 – ONLY $149.95!**

Ask for item# UTI 0423

- **FileGuard** 2.7-*"It's sleek, fast and safe. I highly recommend it." MacUser.* Protect your hard drive, applications, files, and folders (including System Folder) from erasure, unauthorized access, deletion, and illegal copying. Item# UTI 0135 $139.
- **TrashGuard**-Delete files forever! Using the Trash Can to delete a file only makes the space available, but does not erase data. TrashGuard not only deletes files, it actually removes them from your hard disk. Item# UTI 0322 $49.
- **FileDuo**-Backup your important files quickly and automatically! FileDuo creates backups any time you want: every 5 minutes, at a specific time, or when you shut down your Mac. Item# UTI 0323 $89.

*Publisher:* ASD Software

## 44 MB SyQuest BLOWOUT!

For a limited time, get a 44MB Removable SyQuest Drive for only $199– plus, get your first* 44MB cartridge for only $29.95!
**Limit one 44 MB cartridge for each 44 MB drive purchased. Call for details.*

Featuring SyQuest

Ask for item# DRI 0977

**Now only $199!**

Cartridge not included.

## 8-15 hr. PowerBook Battery!

### VST ThinPack Plus

High-density, maintence-free batteries for the Power Book. UL listed for safety and comes bundled with VST Utilities battery management software.
*Manufacturer:* VST Power Systems
*Also available:* ThinPack Complete
Item# ACC 1286
$199.95

Item# ACC 1424
**$269.95**

## Track computer time use with WindoWatch!

WindoWatch 1.5.5 tracks window usage on stand-alone or networked Macs—perfect for Desktop Publishers or any business that bills clients for computer time! The program keeps track of every minute spent in any program, and records this information in the form of a timesheet. Even differentiates between actual use and paused time – when you're working on several jobs at once.
*Publisher:* ASD Software

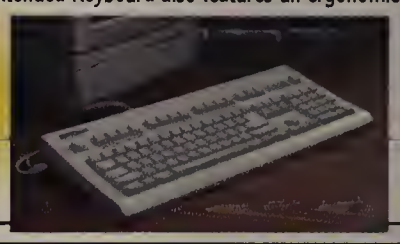
Item# UTI 0264
**$89**

## The most affordable, full-function keyboard ever!

### The Power User105E Extended Keyboard

Work faster and easier with 105 keys, logically arranged for quick typing, cursor movement, and number calculations. The Power User 105E Extended Keyboard also features an ergonomic design.

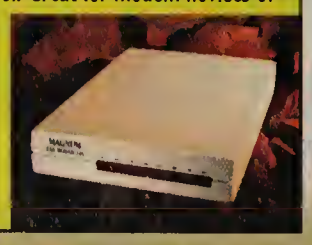
Item# INP 0336
**$69**



## Lightning-Fast-LOW PRICE!

### Magnum 144 Fax/Data Modem

The Magnum 144, with fax and data speeds of 14,400bps, provides V.42bis, MNP data compression and error correction for 57,500bps throughput. Other powerful features include automatic speed and error control. Great for modem novices or experts alike.
*Manufacturer:* Technology Concepts



Item# MOD 0183
**Only $99!**

## MacDraft 4.0

Offers easy-to-use drawing tools, including linear, radial and angular dimensions; special tools to extend and trim lines, create perpendicular, tangent and parallel lines, fillets, chamfers, merge/subtract objects; keyboard editing and placement of objects for increased precision; new integrated database assigns data to objects, creates custom reports and links them to Excel®. *Publisher:* Innovative Data Design

Item# CAD 0049
**$349.99**

Upgrade available. Call for details.

## Fight Desktop Boredom!

### Opus 'n Bill Screen Saver

Screen savers have been known to be funny, but now there's one with an attitude. Introducing **Opus 'n Bill Screen Saver** from Delrina. Let Opus and Bill protect you and your monitor from boredom. Windows and Mac.
*Publisher:* Delrina

Item# UTI 0446
**$29.95**

**Order toll-free 24 hours a day, 7 days a week! 1-800-255-6227**

# THE Mac SUPERSTORE™

# Get Microsoft ENCARTA

NEW FOR MAC!

## A Complete Multimedia Encyclopedia on ONE CD-ROM!

- More than 25,000 articles!
- Thousands of images!
- Thousands of sounds!
- Hundreds of maps and charts!

FOR ONLY **$89!*** 

Ask for item# BND 0348

*when you buy any CD-ROM Drive from us at the same time.

**Plus, 2 CD-ROMs FREE!**

Now, when you buy any CD-ROM drive and ENCARTA from us at the same time, you'll also receive the *Space Shuttle* and *Oceans Below* CD-ROMs absolutely FREE!

FREE! FREE!

Plays music CDs, too!

*To order this Power User Double-Speed CD-ROM drive, ask for item# DRI 0891.*

**Get this *Double Speed, Multi-Session* CD-ROM Drive for only $199!**

### BUSINESS & PRESENTATION

**A LASTING IMPRESSION**
ResumExpert (Full line available) ..... ea. 59.
**ALDUS**
BUS0298 DateBook Pro ..... 49.
DAT0104 TouchBASE Pro ..... 49.
**BASELINE PUBLISHING**
SPL0029 Thunder 7 1.5.3 ..... 56.
**CLARIS**
DAT0112 FileMaker Pro. 2.1 ..... 269.
**INTUIT**
FIN0201 Quicken 4.0 ..... 44.95
**LOTUS DEVELOPMENT CORPORATION**
BUS0188 Lotus 1-2-3 for Macintosh 1.1 ..... 299.
**MICROSOFT**
BUS0223 Excel 4.0 ..... 295.
BUS0181 Project 3.0 ..... 445.
BND0349 Office 3.0 w/ F/A-18 Hornet ..... 475.
BUS0269 PowerPoint 3.0 ..... 295.
WRD0059 Word 5.1 ..... 295.
**BEST!WARE**
FIN0212 M.Y.O.B. 4.0 w/o Payroll ..... 59.95
FIN0213 M.Y.O.B. 4.0 w/ Payroll ..... 109.95
**WORDPERFECT CORPORATION**
WRD0068 WordPerfect 3.0 (◆) ..... 299.95

### COMMUNICATIONS & NETWORKING

**ADOBE**
COM0171 Adobe Acrobat Starter Kit ..... 669.
**APPLE COMPUTER, INC.**
NET0250 AppleShare 3.0.1 ..... 969.
COM0211 Apple Remote Access ..... 189.
UTI0514 Apple Personal Diagnostic ..... 99.95
**DAYNA COMMUNICATIONS, INC.**
NET0358 EtherPrint-3 Plus ..... 449.
**FARALLON™ COMPUTING**
NET0007 PhoneNET® Plus, SE & II ..... 29.95
**GLOBAL VILLAGE (FULL LINE AVAILABLE)**
PowerPorts ..... Call.
**HAYES**
MOD0130 ACCURA 144+Fax 144 ..... 169.95
MOD0129 ACCURA 96+Fax96 ..... 159.95
**INSIGNIA (FULL LINE AVAILABLE)**
UTI0433 AccessPC 3.0 ..... 89.95
**POWER USER®**
MOD0116 14.4 Send/Receive Fax Modem ..... 159.95
**SHIVA**
NET0246 LANRover/L ..... 599.
**ZOOM TELEPHONICS**
MOD0109 VFX V.32bis MacPack ..... 149.95

### EDUCATIONAL & ENTERTAINMENT

**BRODERBUND**
GRA0268 Kid Pix 1.2 ..... 35.
**NORDIC SOFTWARE**
EDU0051 MacKids Turbo Math Facts 2.0 ..... 25.
**PERSONAL TRAINING SYS. (FULL LINE AVAILABLE)**
Excel 4.0, Word 5.1, Filemaker Pro 2.0 ..... ea. 49.
**THE SOFTWARE TOOLWORKS**
BND0169 Miracle Piano Bundle ..... 229.

### GRAPHICS & DESIGN

**ADOBE**
GRA0772 Illustrator 5.5 (◆) ..... 389.
GRA0430 Photoshop 2.5.1 (◆) ..... 559.
**ALDUS**
GRA0654 FreeHand 4.0 ..... 389.95
GRA0757 Paint & Publish ..... 89.
DTP0088 PageMaker 5.0 ..... 579.
UPG0032 PageMaker 5.0 Upgrade ..... 149.
**APPLE COMPUTER, INC.**
GRA0347 QuickTime Starter Kit ..... 79.
**CLARIS**
GRA0350 MacDraw Pro 1.5 ..... 269.95
**RAY DREAM**
GRA0605 Ray Dream Designer 3.0 ..... 249.95
**QUARK, INC.**
DTP0110 XPress 3.3 ..... 589.
**SOFTKEY SOFTWARE**
FON0480 KeyFonts ..... 49.

### INPUT & OUTPUT

**CAERE**
INP0289 OmniScan ..... 299.95
**KENSINGTON**
INP0231 Turbo Mouse (SE or II) 4.0 ..... 109.
**MICROTEK (FULL LINE AVAILABLE)**
INP0246 Microtek ScanMaker II ..... 699.
**SUPERMAC**
MON0053 SuperMatch 20+ Color Display ..... 1799.

### POWERBOOK PRODUCTS

**BATTERY TECHNOLOGY INC.**
ACC0840 Battery for Powerbook ..... 59.95
**KENSINGTON**
INP0221 Notebook Keypad ..... 79.
**SOPHISTICATED CIRCUITS**
INP0232 Powerpad ..... 69.95

### UPGRADES & DRIVES

**DAYSTAR DIGITAL**
DRI0469 Universal PowerCache 33 MHz ..... 299.
DRI0806 20 MHz Turbo 040i Accelerator ..... 499.
**PERIPHERAL LAND, INC.**
DRI0615 Infinity 88/RW44 ..... 559.95
**POWERUSER®**
CHP0011 4 Meg SIMMs 80ns ..... Call.
CHP0013 1 Meg SIMMs 100ns ..... Call.
BND0176 44/88C MB SyQuest w/ cartridge ... 429.95
BND0361 44MB SyQuest w/ cartridge ..... 228.95

### UTILITIES & PROGRAMMING

**ALADDIN SYSTEMS**
UTI0302 StuffIt Deluxe 3.0 ..... 69.
**APPLE COMPUTER, INC.**
SYS0004 System 7.1 Personal Upgrade Kit ..... 45.
SYS0010 At Ease 2.0 ..... 45.95
**CAERE**
UTI0293 OmniPage Direct ..... 99.95
**MICROMAT COMPUTER SYSTEMS**
UTI0285 MacEKG 2.0 ..... 89.
**SYMANTEC CORPORATION**
UTI0151 Norton Utilities for the Mac 2.0 ..... 95.
UTI0334 Symantec Antivirus 3.5 (SAM) ..... 65.95
**ASD SOFTWARE**
UTI0135 FileGuard 2.7 ..... 139.

(◆) Accelerated for Power Macintosh - Runs on your regular Mac too.

**MacWAREHOUSE carries more than 2000 Macintosh products, including all the latest releases and new versions. We pride ourselves on getting new products first. Just fill in the information requested below and mail the coupon. We'll start your free, one-year subscription to the MacWAREHOUSE catalog with the next issue.**

**Order by Midnight (E) for Overnight Delivery – Only $3.00!**

To order, call toll-free

# 1-800-255-6227

(1-800-ALL-MACS)

***Call 24 hours a day, 7 days a week.***

Inquiries: 908-367-0440 FAX Your Order to: 908-905-9279
Compuserve Code: GOMW
**NEW! Express Customer Service Number:**
**1-800-925-6227**

**MacWAREHOUSE®**
1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701
©1994 Micro Warehouse Inc.

- All major credit cards accepted. No surcharge.
- Your credit card will not be charged until your order is shipped.
- If we ship a partial order, we pay the freight on the remaining portion.
- All U.S. shipments are insured at no extra charge.
- C.O.D. orders accepted (add $6.00 including shipping)-$1,000 maximum.
- All products are covered by a 120-day limited warranty. Defective software replaced immediately. Hardware replaced or repaired at our discretion.
- Some products may have system requirements. Call for details.
- **Sales tax:** CT residents add 6%, NJ residents add 7%, Ohio residents add appl. tax.

**SHIPPING**

- All orders add $3.00 per order. We ship Airborne Express overnight unless UPS Ground delivers overnight. (Some rural areas require an extra day.)
- Orders placed by 12:00 MIDNIGHT (EST) (weekdays) for "in-stock" items ship same day (barring system failure, etc.) for overnight delivery.
- C.O.D. orders ship via UPS (Blue Label if you are more than 2 days from us via UPS Ground). Charge is $6.00 including shipping.
- Alaska, Hawaii, outside continental U.S., APO/FPO call 908-367-0440 for information. Some products are not available outside the U.S.
- We regret that we cannot be responsible for typographical errors.
- For faster service for existing customers, our computers recognize incoming calls by the telephone number and instantly locate your records.

©Copyright 1994 MicroWarehouse, Inc. MacWAREHOUSE® is a division of MicroWarehouse, Inc. MacWAREHOUSE® and MicroWarehouse® are registered servicemarks of MicroWarehouse, Inc. Item availability and price subject to change without notice. Apple, the Apple logo, Mac and Macintosh are registered trademarks of Apple Computer, Inc.

**FREE CATALOG SUBSCRIPTION** **MW0894**

Check the appropriate box(es) to receive your FREE 1-year subscription and mail this coupon to:
**1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701**

Name _____

Address _____ Apt. _____

City _____ State _____ Zip _____

(Expect to receive your first issue within 4-6 weeks).

☐ MacWAREHOUSE® ☐ Data Comm WAREHOUSE™
☐ MicroWAREHOUSE® ☐ CD ROM WAREHOUSE™

Circle 150 on reader service card

# BOTTOM LINE DISTRIBUTION 1-800-622-8721

## radius

Precision Color 17"/21" $999/2110
IntelliColor Display 20i.....1849
● LeMans GT .....1899
Precision Color 20V.....1575
● Precision Color Pro 24x .....1245
Precision Color Pro 24xP .....429
VideoVision Studio.....3275
StageTwo Rocket.....1499
● *Free NEC CD-ROM with purchase of selected items*

*JetInc is the most economical way to refill your ink jet printers. It provides over 50% savings, and incorporates recycled materials to help reduce landfill waste.*

2Pk Black/Color .....$15.99/22.99
2Pk High Capacity Black .....19.99
500c/550c/560c/310 8Pk ....55.95
AppleColorPrinter 2Pk Black ....22.95
Cyan/Yellow/Magenta.....29.95

## DiiMO

DiiMOCache™.....$137
*For the LC III/Performa 450*
DiiMOCache™ w/25MHz FPU ...$210
*For the LC III/Performa 450*
DiiMOCache™ 50MHz .....$439
*For the Mac IIci, IIvx/vi, Per. 600*
DiiMOCache™ 50MHz w/FPU ..$518
*For the Mac IIci, IIvx/vi, Per. 600*

## SyQuest TECHNOLOGY

44MB External Drive.....$189
88c MB External Drive.....349
200 MB External Drive.....499
270 MB External Drive.....499
44 MB Cartridge .....57
88 MB Cartridge .....69
200 MB Cartridge .....99
270 MB Cartridge .....65

## Summagraphics

*SummaSketch FX Tablet*
- Pressure sensitive tablet with stylus
- Unique cordless/corded convertible transducer
- 256 levels of pressure

12"x12" Tablet.....$399
12"x18" Tablet.....$739

## UMAX

1200SE 3000dpi .....$2595
UC630MAC w/PhotoshopLE.....649
UC840MAC w/Photoshop .....935
UC1260MAC w/Photoshop .....1189
Transparency Adapter.....439
Auto Document Feeder .....399

## PLI

Infinity 88 Internal.....$389
Infinity 88 External .....469
Infinity 200 .....669
Infinity 270 .....609
1.3GB Maxoptical .....2799
MiniArray 1.0GB.....2049
Quick SCSI .....309
21MB Floptical.....369

## Texas Instruments

1MB TI Memory.....$40
MicroWriter PS23.....679
MicroWriter PS65.....989
MicroLaser Pro 600 PS23.....1299
MicroLaser Pro 600 PS65.....1465
MowerStep40MHz Upgrade .....325
MicroWriter Toner.....45
MicroLaser Pro Toner .....159

## iomega™

Transportable90 Pro .....$349
Transportable150 Pro .....497
90MB Cart.....92
150MB Cart.....99
150MB Cart 5 Pack.....489
44MB Cart for SyQuest.....49
88MB Cart for SyQuest.....75

## WACOM

ArtZ Demo .....$235
ArtZ .....269
12x12 UD Tablet.....499
12x18 UD electrostatic .....810
12x18 UD transpar. surface.....675
Painter v2.0 w/Tablet.....199
Four Button Cursor.....108

## Bottom Line Carries Over 8000 Products

7th Guest CD-ROM .....$51
Adobe Illustrator 5.5 .....399
Adobe Photoshop 2.5.1 .....499
Aldus Pagemaker 5.0.....499
Canvas 3.5 .....249
DeBabelizer.....275
Filemaker Pro 2.1 .....235
Flying Nightmares PowerPC.....55
Fontographer 4.0 .....249
Fractal Painter .....239
Fractal X2.....75
Freehand 4.0.....369
Infini-D 2.6 PowerPC .....780
Iron Helix CD-ROM .....59
The Journeyman Project CD.....59
Macromind Director 4.0 .....699
MiniCAD+ 4.0.....499
MS Excel 4.0.....279
MS Office 3.0.....410
MS Word 5.1.....279
Myst CD-ROM .....51
PGA Tour Golf II .....60
QuarkXPress 3.3 .....549
QuicKeys 3.0.....103
RamDoubler .....50
SoftWindows PowerPC.....270
Streamline .....130
Studio Pro.....595
Suitcase 2.1 .....49
System 7.1 Pro .....99

## Call If You Don't See What You're Looking For.

DGR Technologies is committed to the excellence that has made us the industry leader. Each drive is shipped in an all-steel case with a universal 40 watt power supply, double shielded SCSI cable, external terminator and a free cartridge. (Also for PC's!)

128 MB.....$799
256 MB.....$899
1.3 GB .....$2299
Internal PC Card.....$149
PC Parallel to SCSI Adapter.....$199

## DGR Technologies MultiMax

Upgrade your LC, LCII, LCIII and Performa 400 with the **DGR LC MAX or MultiMax.** Increase the single expansion slot to four, add another hard drive and supplement your LC with an additional 40 watt power supply. Enter the world of Multi-Media with the DGR MultiMax! Equiped with a multi-session, double spin CD-ROM and amplified stereo speakers, you can access the vast library of CD-ROMs available or listen to your favorite music.

DGR Technologies

MultiMax .....$799
LC MAX .....$299

ONE HOUR QUOTE RESPONSE

CUSTOM APPLE CONFIGURATIONS

INTERNET ACCESS sales@max.dgr.com world@max.dgr.com

ESTABLISHED 1985

NET 30 TERMS

# BOTTOM LINE DISTRIBUTION

# 1-800-622-8721

*For best prices and service, call*

VISA · MasterCard · DISCOVER · DHL · AIRBORNE EXPRESS

**Executive Multi-Media Pack**

- *Double-Speed/Multi-Session, Kodak Photo CD Compatible.*
- *Complete with powerful stereo speakers, headphones, microphone and five CD titles.* ***All for only $489***

## HEWLETT PACKARD

| | |
|---|---|
| ScanJet II cx | $939 |
| DeskWriter 310 | 299 |
| DeskWriter 520 | 299 |
| DeskWriter 560c | 579 |
| LaserJet 4ML | 1029 |
| LaserJet 4MP | 1395 |

**Saturday Shipping Now Available**

## GLOBAL VILLAGE

| | |
|---|---|
| Mercury | $275 |
| Gold | 225 |
| Bronze II | 93 |
| One World Fax | 793 |
| Duo Mercury | 319 |
| Duo Software | 74 |

## Power PC

| | |
|---|---|
| 6100CD 16-500/1GB | $2767/3048 |
| 7100 16-500/1GB | 3342/3623 |
| 7100CD 16-500/1GB | 3601/3882 |
| 8100 16-500/1GB | 4611/4892 |
| 8100CD 16-500/1GB | 4877/5158 |
| Custom configurations | Call |

Supra Corporation

| | |
|---|---|
| 14.4 Mac Package | $205 |
| 14.4 LC | 149 |
| 14.4 Powerbook | 219 |
| 28.8 Mac Package | 299 |

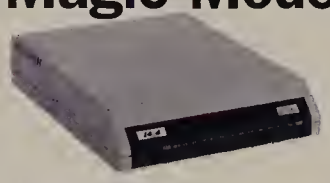
**Magic.** Hard Working Tools For Your Macintosh Since 1985.
Brought to you by **MacProducts USA**

*Call for your free MacProducts catalog.*

## Magic Network Tools

| | |
|---|---|
| MagicNet Adapter | $12 |
| Magic 10BaseT Adapter | 49 |
| Magic 10BaseT/ThinNet Adapter | 49 |
| Magic 8 Port 10BaseT Hub | 149 |
| Magic 8 Port 10BaseT Hub | 249 |

## Magic Modems



**Magic Fax Modems**

| | |
|---|---|
| Magic 28.8 V. Fast Class | $199 |
| Magic 14.4 Data/FaxModem | 99 |
| With Voice Mail | 189 |
| High Speed Modem Cable | 15 |

**Magic Powerbook Int. Modems**

| | |
|---|---|
| 14.4bps Data/FaxModem | 119 |
| 24/96 Data/FaxModem | 79 |

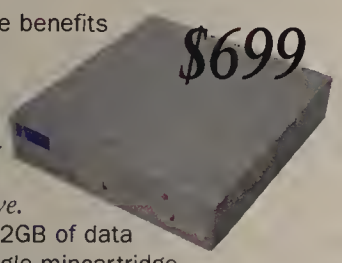
*All FaxModems come with full feature fax and data software, America Online and Compuserve Startup Kit.*

## Magic Hard Drives

| | |
|---|---|
| Magic 240 External | $299 |
| Magic 1.0 GB Ext. 9 ms | 799 |
| Magic 2.0 GB Ext. 9 ms | 1199 |
| Active Terminator | 59 |

*Call us about custom configurations*

## Magic 2GB Tape Drive




Enjoy the benefits of the *world's fastest minicartridge tape drive.* Backup 2GB of data on a single mincartridge in 30 minutes or less. This high quality SCSI interface drive provides the best value in minicartridge technology. Compare 35 cents per MB vs. our closest competitor's 65 cents. Each drive comes with Retrospect 2.1 and a *two year warranty!*

## Magic Memory

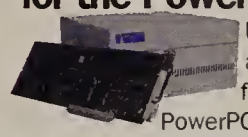
| | |
|---|---|
| 1MB 30pin 80ns. | $25 |
| 2MB 30pin 80ns. | 68 |
| 4MB 30pin 80ns. | 124 |
| 4MB 72pin 60/70/80ns | from 129 |
| 8MB 72pin 60/70/80ns | from 259 |
| 16MB 72pin | 549 |
| 32/64MB 72pin 60ns | 1295/2795 |
| Powerbook RAM | Call |
| Newton 1MB/2MB | from 159 |
| LC VRAM | 29 |
| Quadra VRAM | 19 |
| ColorBlaster LC | 149 |

*All Magic memory has a 30 day money back guarantee and a lifetime warranty.*

## Magic 128 Optical Drive

| | |
|---|---|
| Magic 128 Optical/Turbo | $739/838 |
| Magic 230 Optical | 899 |
| Magic 256 Optical/Turbo | 899/999 |
| Magic 1.3GB /Turbo | 2299/2399 |
| 128 MB Carts/10 Pack | 27/240 |
| 230 MB Carts | 49 |
| 256 MB Carts/10 Pack | 65/590 |
| 1.3 GB Carts | 135 |

## Magic 1GB RAID Upgrade for the Power PC 8100



Utilize the advanced SCSI features of you PowerPC to the fullest with the **Magic 1GB RAID Upgrade**, the ideal solution for desktop video on the PowerPC. This system is compatible with SCSI 1,2 and SCSI Manager 4.3. RAID drives come with software and cables.

| | *Upgrade* | *External* |
|---|---|---|
| 1.0GB RAID | $799 | $1899 |
| 2.0GB RAID | 1495 | 2499 |
| 4.0GB RAID | | 2999 |
| 18.GB RAID | | 9495 |
| Software | | 190/599 |

**Call Bottom Line 1-800-622-3475 or 1-512-472-4956**
**On the Internet: sales@max.dgr.com**

TO ORDER FROM BOTTOM LINE: Call 1-800-622-8721. Payment: Visa, Mastercard, Discover & American Express. No surcharge on credit card orders. Tax: Texas residents add 8% sales tax. Prices: Items and prices subject to change and availability. Terms: Net 30 available.
Shipping: minimum $5-UPS Ground, Blue, Red, Federal Express, & Airborne. Returns: All returns must be in original condition and packaging and require an RMA number. Seal must not be opened on software. Returns may be subject to a restocking fee. Original shipping is non-refundable. International Orders: Bottom Line provides the extra level of support international clients require: 24-hour international fax line, 220-volt versions of most hardware, discount rates and customs brokerage available via DHL and FEDERAL EXPRESS, 2-3 DAY DELIVERY to most countries. Bottom Line Distribution cannot be responsible for errors in typography or photography. All brands, and product names are trade marks of their respective holders.

INTERNATIONAL SALES · LOW PRICE GUARANTEE · OVER 8000 PRODUCTS · OPEN 7 DAYS A WEEK · PC + MAC

B84MW

Circle 63 on reader service card

# ProDirect

# Call 800-524-9952

- MOST ORDERS SHIPPED SAME DAY.
- NO SURCHARGE ON CREDIT CARDS.
- NO OUT OF STATE SALES TAX COLLECTED
- 30 DAY MONEY BACK GUARANTEE ON ALL DRIVE PRODUCTS.

**Summer Special**

**Micropolis 1.7 GB AV .....Only $1025**

**Seagate 2.4 GB Barracuda II..Only $1725**

*Both drives are perfect for your Direct to Disk recording needs. SCSI Manager 4.3 savvy driver for all of your PowerMac & AV needs included with all ProDirect Drives.*

## Quantum *Best Byte for MACs*

### New Product

| Capacity | Seek | RPM | Disc Cache | Int | Ext |
|---|---|---|---|---|---|
| LPS 170 MB | 12M5 | 4500 | 128K | 199 | 259 |

*3.5" LOW PROFILE, LOW POWER DRIVES*

### LPS Series

| Capacity | Seek | Int. | Ext. |
|---|---|---|---|
| 270 MB | 11ms | CALL | CALL |
| 340 MB | 11ms | 290 | 350 |
| 540 MB | 12ms | 395 | 455 |

3.5" LOW PROFILE, LOW POWER DRIVES
LPS and ELS series includes a 2 year warranty.

### GO Drive Series

| Capacity | Seek | Int. | Ext. |
|---|---|---|---|
| 80 MB | 17ms | 185 | 255 |
| 127 MB | 17ms | 230 | 315 |
| 170 MB | 17ms | 255 | 335 |
| 256 MB | 17ms | 345 | 425 |

### Empire and Pro Series

| Capacity | Seek | RPM | Disc Cache | Int | Ext |
|---|---|---|---|---|---|
| 540 MB | 9.5ms | 5400 | 512K | $545 | 605 |
| 1080 MB | 10ms | 5400 | 512K | 699 | 759 |
| New Price! 1800 MB | 10ms | 4500 | 512K | 965 | 1025 |

Includes 5 year factory warranty

## Seagate

| Capacity | Model | Size | Access | RPM | Disc Cache | Int | Ext |
|---|---|---|---|---|---|---|---|
| 1.2 GB | ST31200N | 3.5 | 10ms | 5400 | 256K | $775 | $835 |
| 1.9 GB | ST11950N | 3.5" | 8ms | 7200 | 1024K | 1485 | 1545 |
| 2.4 GB | ST 12550N | 3.5" | 8ms | 7200 | 1024K | 1725 | 1785 |
| NEW! 4.2 GB | ST15150N | 3.5" | 8ms | 7200 | 1024K | Call | Call |
| 3.4 GB Elit e3 | ST 43400N | 5.25" | 10ms | 5400 | 512K | 2125 | 2225 |
| 9 GB Elite 9 | ST 410800N | 5.25" | 11ms | 5400 | 512K | CALL | CALL |

All Seagate drives came with a 5 year factory warranty and are backed by a 30 day money back guarantee. External drives came with a double shielded system cable and external termination. All advertised models are SCSI 1 & 2 compatible.

## MICROPOLIS

| Capacity | Model | Size | Access | RPM | Disc Cache | Int. | Ext. |
|---|---|---|---|---|---|---|---|
| 1.2 GB | M4110 | Low Profile | 8 MS | 5400 | 256K | $750 | $810 |
| 1.2 GB | M2210 | 3.5" | 10 MS | 5400 | 512K | 750 | 810 |
| New Price! 1.7 GB | M2217 | 3.5" | 10 MS | 5400 | 512K | 970 | 1030 |
| 2.4 GB | M1926 | 3.5" | 11 MS | 5400 | 256K | 1420 | 1520 |
| 3.6 GB | M1936 | 5.25" | 11 MS | 5400 | 256K | 2135 | 2195 |
| **Direct to Disk Recording AV Drives** | | | | | | | |
| 1.2 GB | M2210AV | 3.5" | 10 MS | 5400 | 512K | 810 | 870 |
| 1.7 GB | M2217AV | 3.5" | 10 MS | 5400 | 512K | 1025 | 1085 |
| 3.6 GB | M1936AV | 5.25" | 11MS | 5400 | 512K | 2185 | 2285 |

All drives came formatted and packaged with the latest SCSI Manager 4.3 compatible driver software. External drives came with a double shielded system cable and external termination.

- Transfers up to 10mb/sec.
- Fast SCSI-2
- 5 Year (HOT SWAP) Warranty
- 300,000 Hours MTBF
- COMES WITH QUADRA AV

## SyQuest

| Capacity | Model | Seek | RPM | Buffer | Int | Ext |
|---|---|---|---|---|---|---|
| 44MB | SQ555 | 20ms | 3200 | 8K | 249 | 309 |
| 88 MB | SQ5110C | 20ms | 3200 | 32K | 375 | 405 |
| NEW! 105 MB | SQ3105 | 14.5ms | 3600 | 64K | 329 | 379 |
| 270 MB | SQ3270 | 13.5ms | 3200 | 128K | 549 | 565 |

*One FREE Cartridge Included with all SyQuest Products!*

| Removable Media | | Price |
|---|---|---|
| 44 MB | SQ400 | $55 |
| 88 MB | SQ800 | 64 |
| 105 MB | SQ310 | 59 |
| 200 MB | SQ2000 | 78 |

All SyQuest cartrideges come with 5 year warranty. ProDirect, Inc. offers a 30 day money back guarantee. All drives include a FREE copy of Anubis Formatting Software.

## FUJITSU

| Capacity | Model | Access | RPM | Disc Buffer | Int | Ext |
|---|---|---|---|---|---|---|
| 330MB | M2622 | 14ms | 4500 | 128K | $310 | $370 |
| 520 MB | M2624 F/A | 9ms | 4500 | 512K | $545 | $605 |
| 1.2 GB | M2694ESA | 8.5 ms | 5400 | 512K | $775 | $835 |

DynaMO128 — 128 MB Dyna MO 30 ms, 3600 RPM, SCSI-2 — $865

## Memory Products

| Memory | | Centris, LCIII & Quadra | |
|---|---|---|---|
| 2x8x80 | Call | 4 MB -70 ns/ 4 MB 60 ns | Call |
| 4x8x80 | Call | 8 MB -70 ns/ 8 MB 60ns | Call |
| 4x8x80(FX) | Call | 16 MB 70 ns | Call |
| 16x8x80(Low Profile) | Call | 32 MB -60 ns | Call |
| 16x8x80 (FX) | Call | VRAM | |
| *All memory has a lifetime warranty!* | | Video RAM 256K/512K | Call |

## HEWLETT PACKARD

| Capacity | Model | Access | RPM | Warranty | Int. | Ext. |
|---|---|---|---|---|---|---|
| 1.2 GB | C2247 | 9.5 ms | 5400 | 5 Year | $845 | $905 |
| New Price! 2.4 GB | C2490 | 8.5 ms | 6400 | 5 Year | 1645 | 1705 |
| 2.35 GB | C3010 | 11 ms | 5400 | 5 Year | 1975 | 2075 |
| **Optical Drives** | | | | | | |
| 1.3 GB MO | C1716T | 23.5ms | 2400 | 1 Year | 2599 | 2699 |

## TAPE BACKUP DRIVES

| Capacity | Model | Media | Int. | Ext. |
|---|---|---|---|---|
| 2.0 GB | HP35470A | 4mm | $935 | $985 |
| 3-5 GB | HP35480A | 4mm | 1105 | 1150 |
| 4-10 GB | HP1533A | 4mm | 1365 | 1425 |
| 20-50 GB | HP1553A & Auto Tape Looder | | 3495 | 3595 |
| 2-5 GB | Exobyte 8205 | 8mm | 1535 | 1595 |
| 5-10 GB | Exobyte 8505 | 8mm | 2175 | 2275 |
| 20-50 GB | Exobyte 10i Auto Tape Looder | | CALL! | Call! |

ProDirect tape backup systems include Retrospect backup software. Drives come with 1 piece of media.

## QMS PRINTERS

| Model | Price |
|---|---|
| **PS 410 4PPM,300DPI** | $1399 |
| 2 MB, Hot Ports, PS L1 & HP-PCL, 45 Fonts | |
| ***PS 860 8PPM, 600 DPI, 11x17** | $3825 |
| 12 MB exp. 32 MB,39 Fonts, PS L 1& 2, RISC Processor | |
| ***PS 1725 17PPM, 600 DPI, New Price !** | $4399 |
| 8 MB Exp. to 32 MB, PS Level 1 & 2, RISC Processor | |

*Network interfaces available for Ethernet/Talk,Token Ring for Netware,TCP/IP, DECnet, Emulation for DEC LN03, CCITT Group IV.

## EXTERNAL CABINETS

**ZERO FOOTPRINT** $75
40 watt shielded power supply, 110/220 VAC. Works with all 3.5" and 5.25" HH Drives.

**MICROCAB** Vertical Standing $89
110/220 VAC. Works with any 3.5" Drive.

**FULL HEIGHT** $139
68 watt shielded power supply, 110/220 VAC. Works with all 5.25" Drives.

**Multi Bay Cabinet** $CALL
Two, Four, Six, and Eight Bay Cabinets available. CALL FOR QUOTE. All cabinets come with a 25-50 pin Mac system cable. One year warranty on all cabinets.

# 800-524-9952

## Fax 24 Hrs. a Day 612-941-1109

Fax International Orders 612-929-2421 • Call: 612-941-1805
Business Hours: 8:00am to 7:00pm M-F (CST.)

- Dealer Inquiries Welcomed
- Volume Discounts Available
- P.O.'s Welcomed - Educational, Government, Corporate
- Please Specify For: Mac, HP Workstation, SUN Sparc or IBM RS6000

ProDirect
6824 Washington Ave. S.
Minneapolis, MN 55344

VISA MasterCard

*Prices & Specifications subject to change. All trademarks are registered trademarks of their respective companies. Freight not refundable. All returns may be subject to a restocking fee.*



Circle 135 on reader service card

# HARD DRIVES

**FUJITSU** 1.2GB ONLY $865

| CAPACITY | DESCRIPTION | INTERNAL | EXTERNAL |
|---|---|---|---|
| 1200MB | 3.5" HH 9ms | $865 | $925 |

*Fujitsu Drives carry a 5 year warranty*

**Quantum** 540MB ONLY $425

| CAPACITY | DESCRIPTION | INTERNAL | EXTERNAL |
|---|---|---|---|
| GO170MB | 2.5" NB 17ms | $255 | $385 |
| GO256MB | 2.5" N8 17ms | $335 | $435 |
| 42 MB | 3.5" LP 17ms | $109 | $169 |
| 85MB | 3.5" LP 17ms | $165 | $215 |
| 170MB | 3.5" LP 17ms | $205 | $265 |
| 240MB | 3.5" LP 10ms | $245 | $305 |
| 270MB | 3.5" LP 10ms | $255 | $315 |
| 340MB | 3.5" LP 10ms | $295 | $355 |
| 540MB | 3.5" LP 10ms | $425 | $485 |
| 1000MB | 3.5" HH 10ms | $795 | $855 |
| 1200MB | 3.5" HH 10ms | $965 | $1025 |
| 1800MB | 3.5" HH 10ms | $1075 | $1135 |

*Go Drives carry a 1 year warranty*
*The rest carry a 2 year warranty*

**Seagate** 2400MB ONLY $1740

| CAPACITY | DESCRIPTION | INTERNAL | EXTERNAL |
|---|---|---|---|
| 1200M8 | 3.5" HH 10.5ms | $865 | $925 |
| 1900MB | Barracuda 1, 8ms | $1485 | $1545 |
| 2400MB | Barracuda 2, 8ms | $1740 | $1800 |
| 2400MB | 3.5" HH 10.5ms | $1545 | $1605 |
| 3400M8 | 5.25" FH 11ms | $2150 | $2250 |
| 9000M8 | 5.25" FH 11ms | $4695 | $4795 |

*Seagate Drives carry a 5 year warranty.*

**Maxtor** 290MB ONLY $255

| CAPACITY | DESCRIPTION | INTERNAL | EXTERNAL |
|---|---|---|---|
| 290MB | 3.5" LP 10ms | $255 | $315 |
| 345MB | 3.5" LP 10ms | $295 | $355 |
| 540MB | 3.5" HH 8.5ms | $699 | $759 |
| 1200MB | 3.5" HH 8.5ms | $1199 | $1259 |

*Maxtor 3.5" Drives carry a 3 year warranty.*

# 0% DOWN SUPER LEASING

Only $189 PER MONTH

Call our leasing department for all your leasing needs. You will enjoy the freedom to lease the equipment you want to meet your individual needs. We can lease you a complete system or a hi-res printer. You can choose a 1, 2, 3, 4 or 5 year 100% tax deductible lease.

**DTP SUPER SYSTEM**

- Quadra 650AV 33MHZ, 68040 processor
- 16MB RAM, 1GB hard drive, X keyboard
- 17" hi-res monitor with 24-bit video
- SuperMac Spectrum IV,
- 24-bit accelerator/video card
- ScanMaker IIAV, 1,200 x 600 dpi scanner with Adobe Photoshop LE
- Syquest 88C read/write drive
- Texas Instruments Pro 600, 9ppm, 600dpi laser printer

Special Note: You can create any customized package of equipment to meet your own special needs. Just call our leasing department for a lease estimate.

Three **Super** reasons to lease from **SuperMicro**:

1. 24 hour approvals
2. 100% tax deductible
3. Over 20,000 products available for Lease

24 hour approvals, CALL NOW!

# SCANNERS

| MODEL | DESCRIPTION | PRICE |
|---|---|---|
| **MICROTEK** | **UMAX** | |
| ScanMaker IIG/UC630 | 24-bit Color, 600x300 dpi | $485/659 |
| ScanMaker IISP/UC840 | 24-bit Color, 600x300 dpi | $795/B95 |
| Transparency | For Microtek & UMAX | $599/439 |

**SCAN AV**

Scan AV 4800x4800 dpi 24-bit color only $589

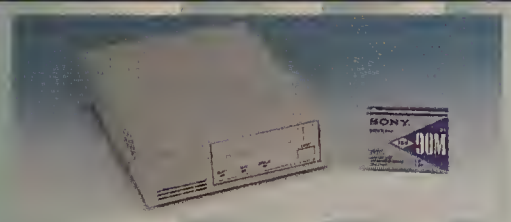
Scan AV 6400x6400 dpi 24-bit color only $699

# SYSTEMS

POWER PC AVAILABLE

| MODEL | DESCRIPTION | PRICE |
|---|---|---|
| Q950 8/200 | SuperMac 20T, Keyboard | $5599 |
| Q800AV B/200/CD | SuperMac 17, Keyboard | $3999 |
| Q650 8/200 | 17" Monitor, Keyboard | $2799 |
| Q660AV 8/250 | 14" Apple, Keyboard | $2069 |
| Q605 8/160 | 14" Apple, Keyboard | $1419 |
| PM8100 8/200/CD | SuperMac 20T, Keyboard | $67B9 |
| PM8100 8/200/CD | SuperMac 17, Keyboard | $5659 |
| PM7100AV B/200/CD | SuperMac 20T, Keyboard | $5999 |
| PM7100 B/200/CD | SuperMac 17, Keyboard | $4199 |
| PM6100 8/160 | 14" Apple, Keyboard | $2099 |

# TAPE DRIVES



| MODEL | CAPACITY | SIZE | MACKIT |
|---|---|---|---|
| Archive Viper 250 | 250MB | 3.5"HH | $499 |
| Archive Viper 525 | 500MB | 3.5"HH | $625 |
| Sony SDT-2000 | 2Gbyte | 3.5"HH | $B79 |
| Sony SDT-4000 | 4Gbyte | 3.5"HH | $B99 |
| Sony SDT-5000 | 5-16 Gbyte | 3.5"HH | $1245 |
| Exabyte B200 | 2Gbyte | 5.25"FH | $1299 |
| Exabyte 8500 | 5Gbyte | 5.25"FH | $2199 |
| Exabyte 8205 | 2-5Gbyte | 5.25"HH | $1595 |
| Exabyte B505 | 5-10Gbyte | 5.25"HH | $2275 |

*Includes external drive, 25/50 SCSI Cable, MAC SW II, and Terminator. Retrospect add $75*

| TAPE | | | |
|---|---|---|---|
| Sony DAT | $22 | Maxell 8mm | $19 |

# SYQUEST DRIVES

| MODEL | INTERNAL | EXTERNAL |
|---|---|---|
| Syquest 270 | $499 | $499 |
| Syquest 200 | $459 | $499 |
| Syquest 105 | $279 | $319 |
| Syquest 88C | $275 | $329 |
| Syquest 44 | $199 | $229 |

*Includes external drive, 25/50 SCSI Cable, Mac SW, Terminator*

| CARTRIDGES | 44MB CARTRIDGES ONLY $49.99 |
|---|---|
| 270MB Cartridges (5+ or with drive purchase) | $98.99 |
| 200MB Cartridges (5+ or with drive purchase) | $98.99 |
| 105MB Cartridges (5+ or with drive purchase) | $5B.99 |
| 88MB Cartridges (5+ or with drive purchase) | $72.99 |
| 44MB Cartridges (5+ or with drive purchase) | $49.99 |

# OPTICAL DRIVES

*5.25" OPTICAL DRIVES* SONY 650MB ONLY $1999

| MODEL | CAPACITY | SEEK | MACKIT |
|---|---|---|---|
| Sony-650 | 594/650MB | 66ms | $1999 |
| Ricoh-9200 EX | 594/650MB | 35ms | $1849 |
| MaxOptix-Tahiti II/III | 594/650/1GB | 25ms | $2299/2499 |
| PMO-650/1.3GB | 594/650/1.3GB | 19*ms | $2599/2799 |
| Sony 1.3GB | 594/650/1.3GB | 25ms | $2299 |

*Includes external drive, 25/50 SCSI Cable, Mac SW, and Terminator*

| CARTRIDGES | PRICE |
|---|---|
| DSC 594/650MB | $79 |
| 3M 594/650MB | $99 |
| Sony 594/650M8 | $119 |
| Sony 1.3G8 | $139 |

650MB ONLY $79

*3.5" OPTICAL DRIVES* PANASONIC 128MB ONLY $689

| MODEL | CAPACITY | SEEK | MACKIT |
|---|---|---|---|
| Panasonic | 128mb | 35ms | $689 |
| Fujitsu-230 | 128mb | 30ms | $999 |
| Sony P-301 | 128mb | 35ms | $999 |
| Most-256 | 128/256mb | 37ms | $895 |

*Includes external drive, 25/50 SCSI Cable, Mac SW, and Terminator*

| CARTRIDGES | PRICE |
|---|---|
| DSC 12BM8 | $29 |
| Komag 128M8 | $33 |
| Sony 128MB | $45 |

128MB ONLY $29

No One Has A More Complete Family of 5.25" & 3.5" Rewritable Optical Drives than **SuperMicro**

# DISK ARRAY RAID SYSTEMS

| DISK ARRAY RAID SYSTEMS | MACKIT |
|---|---|
| 1.0 GB RAID System, 2 x 540MB hard drives | $1329 |
| 2.0 GB RAID System, 2 x 1.0GB hard drives | $2129 |
| 4.0 G8 RAID System, 2 x 2.0GB hard drives | $3499 |
| 6.0 GB RAID System, 2 x 3.0GB hard drives | $3999 |

*Includes external drive, 25/50 SCSI Cable, MAC disk array software, and Terminator.*

*A **SuperMicro** disk array combines multiple hard drives into a single disk, offering high speed data transfer with seek times as low as 5 msec. There are many advantages to disk arrays over individual hard drives:*

- *Higher transfer rates*
- *Faster seek times*
- *Better data integrity*
- *RAID level 0, 1, 4, 5 supported*

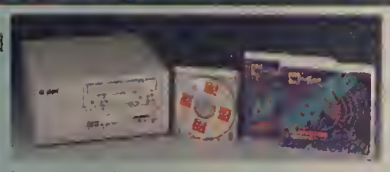
# BUNDLE SPECIAL

Purchase $400 or more and get Adobe Photoshop 2.5 full version for $250

# PRESENTATION COMBO

Syquest 44 & Dual Speed Photo, CD-ROM drive

$555



A Syquest cartridge is large enough to hold several presentations. Use the CD-ROM drive as a source of graphic images. With this combo, you can bring everything you need on disk, and quickly connect it to your client's computer for the presentation.

385 VAN NESS AVE. #110, TORRANCE, CA 90501 • 1-310-782-5760 INTERNATIONAL • 1-310-782-5974 FAX

800-352-3415

UPS
Federal Express

**SuperMicro**

We Specialize in Image Processing

# MAC BARGAIN$™

DI$COUNT PRICE$ ON QUALITY HARDWARE, $OFTWARE & ACCE$$ORIE$

## Buy with confidence from MAC BARGAIN$:

- A leading direct marketer of Mac products
- Over 2,500 products in stock
- Most orders ship the next day
- Our goal is 100% customer satisfaction
- Toll Free Technical Support for our customers

*Great Deals!*

$154.09

### SupraFAXModem 144LC External

Supra Corporation

- Sends/receives data and faxes at 14,400 bps
- Caller ID lets you monitor incoming calls
- Silent Answer lets you use the same phone line for voice and fax communications
- Supports Class 1 and Group 3 fax standards

*Supra #99308*

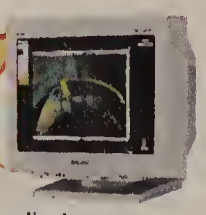
**NEW! from Apple**

$323.96

### Apple External Hard Drive 160MB

- Front panel power-on switch and pilot LED
- Simple SCSI ID check or change under a front mounted pop-up panel
- Complete set of cables, operating software and terminator
- Cushioned foot pads protect the drive and your desk in a vertical or horizontal position
- Advanced 3-1/2" drive technology for fast data access

*Apple Computer, Inc. #95346*



$389.89

### Multiscan 20SE

- Energy Star and VESA compliant
- 3 user-adjustable temperature presets for more accurate whites
- .31mm dot pitch
- Nine preset resolutions

SONY

*Sony #01157*

### Adobe

| | | |
|---|---|---|
| 99251 | Acrobat Exchange Single user | $121.88 |
| 06263 | Dimensions 2.0 | $124.38 |
| 99491 | Illustrator V5.5 | $371.88 |
| 05B0B | Adobe Illustrator 5.0-5.5 Upgrade | $89.98 |
| 04042 | Photoshop V2.5.1 | $544.98 |
| 04670 | Premiere V4.0 | $399.98 |
| 05702 | Premiere v3.0 -4.0 Upgrade | $71.82 |
| 03971 | Streamline V3.0 | $124.38 |
| 06332 | Super ATM | $93.13 |
| 99253 | Type Basics | $123.75 |
| 03497 | Type Manager V3.6 | $37.50 |
| 03950 | Adobe Type on Call | $61.88 |
| 9B501 | Aladdin SitCom | $61.36 |
| 05B20 | Aladdin StuffIt Space Saver | $30.66 |

### Aldus

| | | |
|---|---|---|
| 06711 | Date8ook Pro V4.0 | $42.61 |
| 06319 | Fetch V1.2 | $184.38 |
| 00333 | FreeHand V4.0 | $371.88 |
| 04121 | Gallery Effects Vol. 1 | $124.38 |
| 9B047 | HomePublisher v2.0 | $43.61 |
| 054B1 | IntelliDraw V2.0 | $43.61 |
| 04573 | PageMaker V5.0 | $559.38 |
| 00346 | Persuasion V2.1 | $309.38 |
| 04190 | SuperPaint V3.5 | $46.98 |
| 06712 | TouchBase Pro V4.0 | $42.61 |
| 9B194 | Oate8ook & Touch8ase Pro 4.0 Comp Upgr | $46.98 |

### Altsys

| | | |
|---|---|---|
| 05036 | EPS Exchange V2.0 | $85.11 |
| 04537 | Fontographer | $251.93 |
| 00349 | Metamorphosis Pro | $84.66 |

### Ares

| | | |
|---|---|---|
| 99266 | Font Chameleon V1.0 | $175.17 |
| 0007B | Fontmonger V1.5 | $89.98 |
| 03552 | Avery MacLabel Pro | $42.59 |

### Broderbund

| | | |
|---|---|---|
| 95461 | Automap Atlas | $54.74 |
| 03970 | Bannermania | $21.96 |
| 03513 | Carmen Sandiego/Time | $28.95 |
| 99564 | Carmen Sandiego/USA DLX | $38.47 |
| 056B8 | Carmen Sandiego/World DLX | $38.47 |
| 97732 | Carmen Sandiego/World DLX CO-ROM | $53.00 |
| 02730 | Might and Magic III | $34.84 |

**Microsoft Office v3.0**

*#00427*

ONLY! $454.98

### Coere

| | | |
|---|---|---|
| 05161 | OmniPage Direct | $85.19 |
| 01005 | OmniPage Pro V5.0 | $465.97 |
| 99255 | OmniScan | $292.05 |

### Cloris

| | | |
|---|---|---|
| 04140 | MacProject Pro V1.5 | $364.98 |
| 03478 | FileMaker Pro V2.1 | $244.98 |
| 99734 | Impact V1.0 | $249.38 |
| 99733 | ClarisWorks V2.1 | $182.92 |
| 04073 | MacDraw Pro V1.5 | $244.98 |
| 02201 | MacPaint V2.0 | $76.03 |
| 05032 | FileMaker Pro V2.1 Comp Upg | $104.18 |
| 99750 | Power to Go v2.0 | $36.98 |
| 06343 | Brush Strokes | $36.98 |
| 06525 | MacWrite Pro V1.5 | $90.00 |
| 06304 | Retrieve It! | $22.73 |

### Connectix

| | | |
|---|---|---|
| 06925 | CPU Desktop Utilities | $54.40 |
| 04144 | Maxima V2.0 | $42.31 |
| 05646 | PowerBook Utilities | $53.73 |
| 96785 | RAM Doubler | $51.14 |
| 99127 | Colorage Freedom of Press Classic | $79.36 |
| 00213 | CompuServe Membership Kit | $22.10 |

### Corel

| | | |
|---|---|---|
| 95331 | Corel GALLERY | $32.09 |
| Call | Corel Professional Photo CD's - Call | $25.57 |
| 00203 | Cricket Graph III | $85.23 |

### Dontz

| | | |
|---|---|---|
| 06326 | Diskfit Direct V1.0 | $27.27 |
| 04722 | Diskfit Pro V1.1 | $69.43 |
| 04194 | Retrospect w/ Remote 10pk | $249.76 |
| 025B6 | Retrospect V2.0 | $139.84 |

### Datawatch

| | | |
|---|---|---|
| 06533 | Citadel W/Shredder | $53.55 |
| 06535 | ScreenLink V2.0 Twin pack | $53.55 |
| 06534 | Superset Utilities | $89.24 |
| 02077 | Virex V5.0.3 | $59.16 |

### Delrino

| | | |
|---|---|---|
| 97921 | Qelrina Fax Pro for Mac 1.5 V1.5 | $79.41 |
| 04706 | Far Side Daily Planner | $37.22 |
| 17271 | Intermission Screen Svr | $25.11 |
| 9793B | Qpus & Bill Screen Svr | $27.66 |

### Deneba

| | | |
|---|---|---|
| 9953B | Artworks V1.0 | $100.14 |
| 00B03 | Canvas V3.5 | $260.23 |

### Electronic Arts

| | | |
|---|---|---|
| 97701 | Chuck Yeager's Air Combat | $34.98 |
| 94589 | Cyberplasm Formula CD | $31.98 |
| 94590 | Qeluxe Music V3.0 CD | $84.98 |
| 04454 | Harpoon II CO | $12.95 |
| 00473 | PGA Tour Golf CD | $36.00 |
| 97712 | Populous CD | $30.00 |
| 97703 | Total Qistortion CD | $73.86 |
| 00636 | V for Victory II | $36.00 |
| 94591 | Vampires Coffin CD | $39.98 |
| 97707 | Victory at Sea | $42.00 |

### Entertainment

| | | |
|---|---|---|
| 027B5 | After Oark V2.0 | $25.80 |
| 06519 | The Disney Screen Svr Collection | $25.80 |
| 04053 | More After Oark vol 1 | $21.27 |
| 05934 | Star Trek Screen Svr | $27.50 |
| 95465 | Comptons Movies | $25.31 |
| 03598 | LucasArts Indiana Jones Last Crusade | $19.23 |
| 00307 | LucasArfs Loom | $27.00 |
| 99583 | Maxis A-Train w/Contruct Set | $26.14 |
| 9B21B | Maxis DoodleMation V1.0 | $18.32 |
| 9B221 | Maxis EL Fish | $32.98 |
| 00145 | Maxis Robosport | $20.89 |
| 04721 | Maxis SimAnt | $26.11 |
| 9B222 | Maxis SimCity 2000 | $38.98 |
| 99216 | Maxis SimCity Classic | $20.89 |
| 03B00 | Maxis SimEarth | $27.25 |
| 06B4B | Microprose Civilization | $42.61 |
| 04034 | Microprose Railroad Tycoon | $34.07 |
| 97127 | Paramount Jump Raven CD | $38.98 |
| 97146 | Paramount Lunicus CO | $38.98 |
| 97144 | Paramount Movie Select CD | $26.25 |
| 97145 | Paramount Rock, Rap and Roll CD | $35.77 |
| 0551B | Passport Music Time/Trax Bundle | $84.66 |
| 05264 | Passport Trax | $215.91 |
| 06486 | Psygnosis Lemmings | $32.14 |
| 99237 | Psygnosis More Lemmings | $27.35 |
| 97197 | Velocity Development Spectre VR | $32.81 |
| 94593 | Velocity Development Spectre VR CD | $38.98 |
| 99236 | Virgin 7th Guest CD | $47.93 |

### Froctol Design

| | | |
|---|---|---|
| 03216 | Colorstudio V1.5 | $439.98 |
| 00665 | Painter V2.0 | $258.44 |
| 06957 | Painter X2 | $94.98 |
| 06157 | Sketcher V1.0 | $48.48 |

### Frame Technology

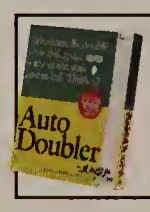
| | | |
|---|---|---|
| 035B2 | FrameMaker V4.0 | $578.11 |
| 9B039 | FrameViewer | $74.95 |
| 96B00 | Farallon Timbuktu Pro | $130.78 |
| 99506 | Gryphon Morph V2.0 | $131.82 |
| 0666B | HSC Kai's Power Tools V2.0 | $106.90 |

### Inline

| | | |
|---|---|---|
| 06015 | Cogito V1.0 | $25.55 |
| 9719B | Qeliverance | $25.55 |
| 97744 | Firefall | $25.55 |
| 06060 | Icon 7 | $30.66 |
| 0063B | INITpicker V3.0 | $40.85 |
| 99200 | Spin Doctor | $30.66 |
| 99227 | Super Maze Wars | $33.22 |

### Insignia

| | | |
|---|---|---|
| 03664 | Access PC 3.0 | $79.55 |
| 067B6 | RapidCD 1.0 | $42.00 |
| 06084 | RapidTrack V1.0 | $58.03 |
| 04541 | Soft PC V3.0 | $101.57 |
| 06715 | Soft PC with Windows | $307.16 |



**AutoDoubler 2.0**

*#95330*

ONLY! $9.98

with any purchase of any product in this ad

### Kent Morsh

| | | |
|---|---|---|
| 99110 | Cryptomatic V1.0 | $53.30 |
| 0025B | Folderbolt V1.02 | $69.83 |
| 99121 | Folderbolt/Nightwatch II Bundle | $122.73 |
| 02755 | Quick Lock V2.1 | $17.05 |

### Lotus

| | | |
|---|---|---|
| 00507 | 1-2-3 V1.1 | $278.98 |
| 0051B | 1-2-3 V1.1 Comp Upg | $92.98 |
| 96010 | Lotus Organizer Scheduler | $93.98 |

### Moc Ploy

| | | |
|---|---|---|
| 04134 | Battlechess | $17.91 |
| 99575 | Battlechess Enhanced | $43.18 |
| 04135 | Checkmate | $28.10 |
| 06161 | Out of this World | $32.47 |
| 97149 | Peter Gabriel XPLORA 1 | $47.06 |
| 99574 | Star Trek 25th Anniversary | $32.07 |
| 00B97 | IdeaFisher 2.0 | $107.93 |
| 04230 | Intuit Quicken V4.0 | $40.98 |
| 04949 | In Control 3.0 | $68.18 |

### Mocromedio

| | | |
|---|---|---|
| 99524 | Macromedia Action! Bundle | $277.88 |
| 00B39 | Macromedia Oirector V4.0 | $820.43 |
| 05288 | SoundEdit Pro | $136.63 |
| 03619 | Swivel 3Q Professional | $291.78 |
| 06B40 | Mac P & L | $170.45 |

### Microsoft Corporation

| | | |
|---|---|---|
| 06184 | Project v3.0 Upg | $134.98 |
| 04161 | Project V3.0 | $424.98 |
| 00227 | Excel V4.0 | $294.98 |
| 01220 | PowerPoint V3.0 | $294.98 |
| 04B9B | Word V5.1 | $294.98 |
| 04545 | Excel v4.0 VER. Upg | $117.27 |
| 00567 | Works V3.0 | $152.80 |
| 00596 | Word V5.1 Upg | $117.27 |
| 03233 | Office V3.0 | $454.98 |
| 99696 | FoxPro V2.5 | $88.98 |
| 04293 | Flight Simulator V4.0 | $39.85 |
| 99702 | Cinemania 1994 | $49.06 |
| 04712 | MYO8 4.0 | $52.00 |
| 9B514 | No Hands Common Ground V1.0 | $85.51 |
| 00580 | Now Software Now Up-to-Date V2.1 | $58.59 |
| 04191 | Now Software Now Utilities V4.0.1 | $80.57 |
| 04736 | QuarkXPress V3.3 | $568.98 |
| 04230 | Quicken 4.0 | $39.98 |

**Adobe Illustrator v5.5**

*#99491*

ONLY! $371.88

### Ray Dreom

| | | |
|---|---|---|
| 05965 | AddDepth V1.0 | $119.01 |
| 00441 | Designer V3.0 | $232.95 |
| 04150 | JAG II | $85.23 |

### Sierro On-line

| | | |
|---|---|---|
| 94595 | Freddy Pharkas | $24.98 |
| 94596 | Hoyle Classic | $29.98 |
| 046B3 | Hoyle II | $18.61 |
| 94597 | Japanese Alive CD | $99.98 |
| 04675 | Kings Quest V | $37.43 |
| 94598 | Kings Quest VI | $45.98 |
| 03296 | Leisure Suit Larry 1 | $17.98 |
| 046B1 | Leisure Suit Larry 5 | $21.36 |
| 94599 | Nova 9 | $19.98 |
| 94002 | Police Quest 3 | $38.98 |
| 94000 | Police Quest4 | $38.98 |

### SoftKey

| | | |
|---|---|---|
| 00641 | WriteNow 4.0 | $55.17 |
| 03631 | Calendar Creator | $36.90 |

### Spectrum Holobyte

| | | |
|---|---|---|
| 01B0B | Falcon V2.2 | $34.98 |
| 06852 | Iron Helix CO | $55.43 |
| 06496 | Super Tetris | $27.82 |
| 01980 | Tetris | $24.98 |
| 04813 | Wordtris | $29.98 |

### Symontec

| | | |
|---|---|---|
| 06231 | ACT! V1.1 | $156.22 |
| 95330 | Autodoubler V2.0 | $9.98 |
| 06763 | Central Point Anti Virus | $45.50 |
| 04413 | Disklock V3.0 | $118.13 |
| 034B1 | MacTools V3.0 | $84.98 |
| 04464 | More V3.1 | $246.88 |
| 04890 | Norton Utilities V2.0 | $93.13 |
| 02194 | PYROI V4.1 | $24.97 |
| 06648 | Safe and Sound | $29.98 |
| 00116 | SAM AntiVirus V3.5 | $61.88 |
| 04776 | Suitcase V2.1 | $49.38 |
| 06997 | Superdoubler V1.0 | $68.13 |
| 06243 | Software Ventures MicroPhone Pro | $136.36 |
| 0682B | Sun Clock 4.0 | $18.18 |

### T/Maker

| | | |
|---|---|---|
| 99503 | ClickArt Incredible Image Pak Oisk | $81.80 |
| 05980 | ClickArt Artistry & Borders | $47.70 |
| 004B1 | WillMaker 5 | $35.15 |

### WordPerfect

| | | |
|---|---|---|
| 96374 | LetterPerfect V2.1 | $34.98 |
| 03972 | WordPerfect V3.0a | $280.98 |
| 99748 | WordPerfect V3.0a Comp Upg | $75.98 |
| 05013 | WordPerfect V3.0a Vers Upg | $48.98 |
| 96363 | Works V1.2 | $69.98 |
| 96375 | Grammatic 5 v1.1 | $34.98 |
| 02648 | 4th Dimension | $588.82 |

**Call MAC BARGAIN$ *before you buy!***

MEMBER SPA Software Publishers Association

Credit Cards are not charged until the order is shipped. Freight is calculated based on carrier's actual freight charges. Most products shipped UPS Ground. Next day delivery available – please ask your Sales Advisor for details. Packaging and handling $4 per order. Returns subject to restocking fee.

**TOLL FREE Technical Suppor For Customers**

# For the Best Deals Around!

# 1-800-619-9091

## MONITORS

### E-Machines

| | | |
|---|---|---|
| 923 | T16II 16" Color | $1,207.95 |

### SONY

| | | |
|---|---|---|
| 156 | Multiscan 15se | $464.77 |
| 909 | GDM-17SE | $1,193.18 |
| 167 | CPD-1730 | $982.95 |
| 157 | Multiscan 20sf | $1,931.82 |

### radius

| | | |
|---|---|---|
| 894 | Full Page Display-Grayscale | $517.05 |
| 52 | PrecisionColor Pivot | $859.28 |
| 873 | PrecisionColor 17" color | $1,039.77 |
| 865 | 20GS 20" Monochrome | $847.26 |
| 895 | Precision Color 20v | $1,687.50 |
| 916 | Intellicolor 20" Display | $1,930.68 |
| 516 | Precision Color 21 | $2,157.95 |

### SUPERMAC

| | | |
|---|---|---|
| 851 | Supermatch 20 Plus Color | $1,682.95 |
| 850 | SuperMatch 20TXL | $2,126.14 |
| 899 | Supermatch 17XL | $1,035.50 |
| 515 | SuperMatch 21TXL | $2,244.59 |

### NEC

| | | |
|---|---|---|
| 147 | NEC MultiSync 3V 15" | $474.98 |
| 801 | NEC MultiSync 3FGe 15" | $574.98 |
| 800 | NEC MultiSync 4FGe 15" | $629.98 |
| 990 | NEC MultiSync 5FGe 17" | $999.98 |
| 146 | NEC MultiSync 5FGp 17" | $1,135.23 |
| 145 | NEC MultiSync 6FGp 21" | $2,055.68 |

## VIDEO/GRAPHICS BOARDS

### E-Machines

| | | |
|---|---|---|
| 160 | Futura II SX | $429.97 |
| 883 | Futura II LX | $776.41 |
| 161 | Ultura LX | $1,121.86 |
| 890 | Simply TV | $379.14 |
| 765 | PowerLink Presentor | $428.25 |

### radius

| | | |
|---|---|---|
| 893 | PrecisionColor 8XJ 8-bit | $467.75 |
| 171 | PrecisionColor Pro 24XP | $470.45 |
| 862 | PrecisionColor Pro 24X | $1,414.77 |
| 892 | PrecisionColor Pro 24XK | $780.39 |
| 893 | Lemans GT | $1,948.74 |
| 164 | Photo Booster | $816.23 |
| 716 | Video Vision | $1,573.86 |
| 863 | Video Vision Studio | $3,680.68 |

### SUPERMAC

| | | |
|---|---|---|
| 116 | Spectrum 8 Series III | $387.77 |
| 513 | Spectrum 24 Series V | $862.77 |
| 879 | Spectrum Power •1152 | $1,208.23 |
| 938 | Thunder/8 | $1,121.86 |
| 913 | Thunder 24 V2.0 | $1,726.41 |
| 898 | Power DSP Upgrade | $517.32 |
| 864 | Thunder It Upgrade | $517.32 |
| 543 | Thunder II GX•1152 | $2,244.59 |
| 544 | Thunder II GX Upgrade | $862.77 |
| 857 | Video Spigot II Tape | $862.77 |

## ACCELERATORS

### DAYSTAR DIGITAL

| | | |
|---|---|---|
| 634 | Universal PowerCache 33MHz/FPU | $365.63 |
| 322 | Universal PowerCache 50MHz/FPU | $553.13 |
| 260 | 33MHz Value 040i 128K Cache | $638.35 |
| 262 | 33MHz Value 040 FPU 128K Cache | $808.81 |
| 263 | 40MHz Value 040 FPU 128K Cache | $979.31 |
| 397 | 33Mhz Turbo 040i Univ. w/128K Cache | $638.35 |
| 398 | 33MHz Univ Turbo 040 w/128K Cache | $808.81 |
| 399 | 40MHz Univ Turbo 040 w/128K Cache | $995.45 |
| 419 | Quad 040 40MHz 68040 w/128K Cache | $979.26 |
| 264 | Image 040 Imaging Xels | $1,575.85 |
| 350 | PowerPro 601 66MHz Xel | $1,499.00 |
| 351 | PowerPro 601 80MHz Xel | $1,999.00 |
| 804 | Charger | $493.47 |
| 482 | Charger Plus | $638.35 |

### radius

| | | |
|---|---|---|
| 250 | Radius Rocket 33 | $1,020.95 |
| 541 | Radius StageTwo Rocket | $1,612.50 |

## NETWORKING

### ASANTÉ

| | | |
|---|---|---|
| 800 | Asante Lite Mac II & Pertorma 600 (TK/TN) | $114.89 |
| 801 | Asante Lite Mac II & Pertorma 600 (TK/10T) | $114.89 |
| 802 | Asante Lite LC family (TK/TN) | $114.89 |
| 803 | Asante Lite LC family (10T) | $101.84 |
| 511 | MC3NB f/ Mac II Performa 600 (TN/TK/10T) | $197.07 |
| 641 | MC+IIE64 for Mac II Pertorma 600 (TK/TN) | $150.93 |
| 642 | MC+IIET64 for Mac II Pertorma 600 (TK/10T) | $150.93 |
| 646 | MC+30IET64 for IISI & SE/30 (TK/10T) | $150.93 |
| 647 | MC+30IE64 for IISI & SE 30 (TK/TN) | $150.93 |
| 648 | MC+SEE for SE (TK/TN) | $144.31 |
| 649 | MC+SEET for SE (TK/10T) | $144.31 |
| 933 | MC3IISI for IISI & SE 30 (TK/TN/10T) | $197.07 |
| 950 | MC+LCtti for LC,LCII,LCIII (TN/10T) | $177.30 |
| 951 | MCLCTNIII forLC,LCII,LCIII (TN) | $149.49 |
| 952 | MCLC10TIII for LC,LCII,LCIII (10T) | $150.93 |
| 104 | Asante Print (10T/TK) | $318.17 |
| 842 | Asante Print 8 (AUI/10T) | $380.40 |
| 817 | Mini EN/SC f/PowerBooks (10T) | $233.43 |
| 818 | Mini EN/SC f/PowerBook (10T/TN) | $302.52 |
| 840 | NetExtender Hub (AUI/10T) | $176.17 |
| 841 | NetExtender Hub FN (AAUI/10T) | $176.17 |
| 499 | Thin FriendlyNet Media Adapter | $65.25 |
| 500 | Thick FriendlyNet Media Adapter | $65.25 |
| 501 | 10 Base T FriendlyNet Adapter | $65.25 |
| 348 | 10T HUB/12 w/10T/TK/TN Ports | $487.07 |
| 404 | 10T HUB/8 w/8 10T/TN Ports | $231.24 |

### Dayna

| | | |
|---|---|---|
| 806 | DaynaPDRT E/LC (TN) DP0400 | $98.86 |
| 03547 | DaynaPDRT E/SE (TN/TK)DP0100 | $136.36 |
| 04595 | DaynaPDRT E/II-T (10T/TK)DP0201 | $98.86 |
| 04717 | DaynaPDRT E/30 (TN/TK)DP0510 | $136.36 |
| 98400 | DaynaPDRT E/SE-T SE (10T/TK) DP0101 | $136.36 |
| 98401 | DaynaPDRT si/30T (10T/TK) DP0511 | $136.36 |
| 98403 | DaynaPDRT E/SE-3 SE (10T/TN/TK) DP0103 | $154.55 |
| 98404 | DaynaPDRT E/LC-M (10T/TN) DP0403 | $145.45 |
| 98405 | DaynaPDRT si/30-3 (10T/TK/TN) DP0513 | $154.55 |
| 05728 | DaynaPDRT E/II-3 (10T/TK/TN) DP0202 | $152.27 |
| 04718 | DaynaPDRT E/II (TN/TK)DP0200 | $106.82 |
| 00488 | DaynaPDRT SCSI Link-3 DP0802 | $277.27 |
| 05190 | DaynaPDRT SCSI/Link 3 (10T/TK/TN)P8 | $294.32 |
| 96825 | Dayna Pocket SCSI Li nk T (10T) | $220.45 |
| 96826 | Dayna Pocket SCSI Li nk M (10T/TN) | $272.73 |
| 05279 | DaynaPDRT EasyNet-T (AAUI/10T) | $51.14 |
| 05280 | DaynaPDRT EasyNet (AAUI/TN) | $51.14 |
| 00003 | Etherprint (10T/TK) | $311.36 |
| 00321 | EtherPrint Plus 2.0 (TN/TK) | $373.86 |
| 03546 | EtherPrint 2.0 (TK/TN) | $311.36 |
| 06595 | Etherprint 3 (10T/TK/TN) | $343.18 |
| 06622 | Etherprint-3 Plus (10T/TK/TN) | $405.68 |
| 04911 | DaynaSTAR MiniHub-8 | $184.09 |
| 06617 | Pathfinder Router | $560.23 |
| 99962 | DaynaSTAR Hub-24 | $794.32 |

### Farallon

| | | |
|---|---|---|
| 98408 | EtherWave AUI Transceiver | $99.68 |
| 98409 | EtherWave AAUI Transceiver | $99.68 |
| 98410 | EtherWave Printer Adapter | $312.90 |
| 98411 | EtherWave NuBus Card | $176.95 |
| 98412 | EtherWave LC Card | $169.15 |
| 98414 | EtherWave P8 or Slot-less Mac Adapter | $292.86 |
| 98413 | EtherWave PC ISA Card | $169.15 |
| 98848 | EtherThin Transceiver (AAUI/TN) | $53.32 |
| 98849 | EtherThin Transceiver (AUI/TN) | $62.78 |
| 03475 | Ether10-T Transceiver (AUI/10T) | $65.48 |
| 04307 | Ether10-T Transceiver (AAUI/10T) | $55.10 |
| 99050 | EtherMac SCSI Adaptor (TN) HDI-30 | $277.41 |
| 99051 | EtherMac SCSI Adaptor (TN) D825 | $261.95 |
| 99052 | EtherMac SCSI Adaptor (10T) HDI-30 | $277.41 |
| 03333 | Ether10-T StarController | $1,035.72 |
| 05693 | Ether10-T Starlet PN515-1 | $261.95 |
| 00828 | PhoneNET DIN 8 10PK PN310 | $192.41 |
| 00832 | PhoneNET DIN 8 PN308 | $28.58 |
| 00955 | PhoneNET DB-9 PN309 | $28.58 |
| 04160 | PhoneNET Connector 50pk PN350 | $771.95 |
| 02779 | PhoneNET Star Connector PN301 | $13.90 |

## COMMUNICATIONS/MODEMS

### Global Village

| | | |
|---|---|---|
| 99319 | GlobalFax Duo Software 2.07 | $77.69 |
| 99307 | Global Village Teleport/Bronze II | $90.42 |
| 05686 | PowerPort Bronze | $90.42 |
| 06267 | TelePort Gold | $222.12 |
| 05684 | PowerPort Gold | $277.61 |
| 98181 | TelePort/Mercury for Desktop Macs | $277.61 |
| 98182 | PowerPort/Mercury for PowerBook 1XX | $317.39 |
| 98183 | PowerPort/Mercury for PowerBook Duo | $317.39 |
| 95206 | One World Fax - 1 Line, Localtalk | $794.66 |
| 95208 | One World Remote Acc - 1 Line, LocalTalk | $953.75 |
| 95207 | One World Fax - 2 Line, Ethernet | $1,192.39 |
| 95209 | One World Remote Acc - 2 Line, Ethernet | $1,510.57 |
| 96598 | GlobalFax for One World 10-User Lic Pk | $198.07 |
| 96599 | GlobalFax for One World 50-User Lic Pk | $794.66 |

### Hayes

| | | |
|---|---|---|
| 06545 | ACCURA 24 Ext | $72.53 |
| 06543 | ACCURA 144 + FAX144 Ext | $169.25 |

### Supro

| | | |
|---|---|---|
| 99308 | Supra FaxModem 144LC Ext - Mac | $154.09 |
| 00413 | Supra FaxModem V.32BIS (MC) w/Sft Cable | $222.73 |
| 96582 | Supra FaxModem 288 Ext - Mac | $305.02 |
| 06865 | Supra FaxModem 144PB Int - PowerBook | $214.77 |
| 96583 | Supra FaxModem 288 Int - Mac PB | $305.02 |

## STORAGE SYSTEMS

### IOMEGA

| | | |
|---|---|---|
| 95354 | Iomega MacTransportable 90 (ND DISK) | $285.41 |
| 96810 | Iomega MacTransportable 90 Pro | $333.14 |
| 96811 | Iomega MacTransportable Multidisk 150 | $468.52 |

### PLI

| | | |
|---|---|---|
| 96820 | Infinity Dptical VR 3.5 IBM | $957.95 |
| 04699 | Infinity 3.5 Dptical Drive (Fujitsu) | $1,071.59 |
| 04698 | Infinity Dpt Sony 3.5 128MB | $1,163.64 |
| 95364 | Infinity 200 Removable Drive | $653.41 |
| 06547 | Infinity 88/R-W 44 | $495.45 |
| 96821 | Infinity MAX Dptical 5.25 1.3GB | $3,397.73 |
| 96822 | Intinity Dptical 5.25 HH 1.3GB | $2,894.32 |
| 97953 | DAT 3.5 10 Gig Drive | $1,437.50 |
| 96823 | Infinity 270 Turbo S | $573.86 |
| 99926 | Infinity 105 Turbo S 105MB REM | $414.77 |

### FWB

| | | |
|---|---|---|
| 97513 | CD-RDM Toolkit | $44.89 |
| 05476 | Hard Disk Toolkit - Personal Ed | $44.89 |
| 00555 | Hard Disk ToolKit | $120.89 |
| 99923 | Hammer PE 170 MB HD | $409.82 |
| 04891 | Hammer PE 340MB HD | $540.38 |
| 94110 | PocketHammer 530 FMF | $1,004.59 |
| 05422 | PocketHammer 1000 FMF | $1,198.05 |
| 94108 | PocketHammer 1600 FMF | $1,816.98 |
| 94109 | PocketHammer 2100 FMF | $2,358.56 |
| 94120 | HammerTape 525MB Ext | $942.26 |
| 94121 | SCSI JackHammer | $617.75 |

### Apple Hard Drives

| | | |
|---|---|---|
| 95346 | 160MB External HD | $323.86 |
| 95347 | 230MB External HD | $409.09 |
| 95348 | 325MB External HD | $448.86 |
| 95338 | 500MB External HD | $714.77 |
| 95339 | 1000MB External HD | $1,130.68 |

### Internal HD

| | | |
|---|---|---|
| 06733 | Duantum 170 MB | $211.36 |
| 97960 | Duantum 270 MB | $323.86 |
| 06941 | Duantum 340 MB | $369.32 |
| 01107 | Duantum 540 MB | $532.95 |
| 99929 | Duantum 1.0 GB | $857.95 |
| 06736 | Duantum 1.2GB | $1,062.50 |
| 97991 | Seagate 2.1GB Barracuda | $1,815.91 |

### Externol HD

| | | |
|---|---|---|
| 06728 | Duantum 170 MB | $278.41 |
| 97961 | Duantum 270 MB | $380.68 |
| 06942 | Duantum 340 MB | $460.23 |
| 01108 | Duantum 540 MB | $598.86 |
| 99927 | Duantum 1.0 GB | $914.77 |
| 06731 | Duantum 1.2GB | $1,112.50 |
| 99168 | Seagate 2.1 GB Barracuda | $2,039.77 |

### Removoble HD

| | | |
|---|---|---|
| 06219 | Syquest 44MB | $227.27 |
| 06538 | Syquest 44/88MB | $329.55 |
| 99930 | Syquest 105MB | $338.64 |
| 01142 | Syquest 200MB | $448.86 |
| 97989 | Syquest 270MB | $487.50 |
| 99187 | 128MB Magneto Dptical | $737.50 |

### PowerBook HD

| | | |
|---|---|---|
| 99174 | 127MB 2.5" Drive | $277.27 |
| 99175 | 210MB 2.5" Drive | $396.59 |
| 99176 | 340MB 2.5" Drive | $559.09 |

## INPUT DEVICES

### MICROTEK

| | | |
|---|---|---|
| 06251 | ScanMaker II | $625.00 |
| 06945 | ScanMaker IISP | $755.68 |
| 06252 | ScanMaker IIXE | $875.00 |
| 01120 | ScanMaker IIHR | $1,051.14 |
| 06903 | 35T Slide Scanner | $1,329.55 |
| 01122 | ScanMaker III | $2,482.95 |
| 06821 | Automatic Document Feeder | $363.64 |
| 13442 | Transparent Media Adapter | $585.23 |

### Colcomp

| | | |
|---|---|---|
| 99380 | DrawingSlate 6x9 Corded Pressure Stylus | $246.88 |
| 98251 | DrawingSlate 12x12 Cordless Pressure Stylus | $371.88 |
| 95241 | DrawingSlate 12x12 Cordless 4B Cursor | $246.88 |
| 95242 | DrawingSlate 12x12 Cordless 16B Cursor | $246.88 |
| 95243 | DrawingSlate 12x18 Cordless 4B Cursor | $371.88 |
| 95244 | DrawingSlate 12x18 Cordless 16B Cursor | $371.88 |

### Logitech

| | | |
|---|---|---|
| 04258 | MouseMan | $62.23 |
| 95612 | TrackMan II | $72.53 |

### Wocom

| | | |
|---|---|---|
| 03677 | 12x12 Std, Cordless Pressure Stylus | $655.80 |
| 00087 | 12x12 Electrostatic, Cordless Pressure Stylus | $1,070.57 |
| 03803 | 12x18 Electrostatic, Cordless Pressure Stylus | $1,051.25 |
| 13342 | UP-201 Cordless Batteryless Pressure Sensitive Pen (UD Series) | $85.23 |

## CD-ROM/MULTIMEDIA

### NEC

| | | |
|---|---|---|
| 97814 | NEC MultiSpin 3Xe External | $479.58 |
| 97815 | NEC MultiSpin 3Xi Internal | $439.48 |
| 97816 | NEC MultiSpin 3Xp Classic Portable | $399.23 |
| 96658 | NEC MultiSpin 3Xp Granite Portable | $399.23 |
| 97817 | NEC MultiSpin 4X Pro | $927.16 |
| 06884 | Media Vision PAS 16 | $90.89 |
| 06789 | Yamaha Hello! Music! | $262.24 |
| 02168 | Yamaha M10 Shielded Speakers | $63.64 |
| 99384 | Altec Lansing 50 Speakers | $66.82 |
| 98280 | Altec Lansing Subwoofer 150 | $100.23 |
| 05689 | Altec Lansing ACS 300 Speakers | $233.86 |

## PRINTERS

### HEWLETT PACKARD

| | | |
|---|---|---|
| 95517 | HP DeskWriter 310 | $324.70 |
| 95518 | HP DeskWriter | $195.45 |
| 95520 | HP DeskWriter 520 | $312.70 |
| 95522 | HP DeskWriter 560C | $615.99 |

### NEC

| | | |
|---|---|---|
| 96746 | NEC Silentwriter 640 | $789.98 |
| 13111 | NEC Silentwriter Model 1097 | $1,419.00 |

### Texas Instruments

| | | |
|---|---|---|
| 12525 | MicroWriter Basic | $542.05 |
| 14319 | MicroLaser Pro 600 PS23 | $1,437.50 |
| 14320 | MicroLaser Pro 600 PS65 | $1,615.91 |

## POWER BACKUP

### Tripp Lite

| | | |
|---|---|---|
| 04605 | Isobar 4 Surge Protector | $38.75 |
| 04740 | Isobar 6 GS Surge Protector | $46.50 |
| 99790 | Tripp Lite BC 250 UPS | $96.17 |
| 06661 | Tripp Lite BC 400 UPS | $160.93 |
| 04744 | Tripp Lite BC 500 UPS | $185.18 |

## MEMORY UPGRADES

Mac Bargains carries Memory upgrades
Please call for contigurations and current prices

## MEDIA

### Bernoulli Cortridges

| | | |
|---|---|---|
| 96824 | Bernoulli 90MB Cart | $79.39 |
| 97289 | Bernoulli 105MB Cart | $78.75 |
| 97291 | Bernoulli 150MB Cart | $87.34 |

Volume discounts Available

### SyQuest Cartridges

| | | |
|---|---|---|
| 02183 | Syquest 44MB Cart Unfo | $57.07 |
| 00183 | Syquest 88MB Cart Unfo | $90.91 |
| 99922 | Syquest 105MB Cart Unfo | $52.27 |
| 00278 | Syquest 200MB Cart Unfo | $109.93 |
| 97992 | Syquest 270MB Cart Unfo | $61.36 |

Volume Discounts Available

$1,149

**SuperMatch 17XL**

SUPERMAC

- Brilliant color
- Razor-sharp clarity
- Multiple resolutions
- Maximum work area
- Flicker-free 75Hz refresh rate

*SuperMac #97899*

$470.45

**PrecisionColor Pro 24XP**

- 24-bit interface for up to 17" monitors
- The most cost efficient 24-bit color solution
- The least expensive, most accelerated interface

*SuperMac #97899*

radius

**PLI Infinity 270 Turbo S**

- 13.5ms access speed
- 2.2MB/second sustained data transfer rate
- Inexpensive expandability
- Includes cartridge

*PLI #96823*

$573.86

PLI

**WHY PAY MORE... when you can get a better price from MAC BARGAIN$?**

*Call Now!*

DI$COUNT PRICE$ ON QUALITY HARDWARE, $OFTWARE & ACCE$$ORIE$

**IF YOU DON'T SEE IT...CALL!**

Please mention this source code when ordering **MW08**

# MAC BARGAIN$™

©1994 MZI, Inc. Redmond, WA ™Trademarks of all companies listed in this ad. All rights reserved

**Knowledgeable Sales Advisors help make buying easy!**

Circle 70 on reader service card

# DIRECT CONNECTIONS

# 800-572-4305

## 30 DAY MONEY-BACK

SHIPPING DRIVES FOR 7 YEARS !!

INT'L 612-937-9604

FAX: 612-937-6285

HOURS: M-F 8:00-6PM CST

*Fully Compatible power pc drives*

DISCOVER NOVUS · VISA · MasterCard

## HARD DRIVES FROM $270

Fujitsu 1.2GIG External—$755

### FUJITSU — 5 YEAR WARRANTY

| CAPACITY | SIZE | ACCESS | INTERNAL | EXTERNAL |
|---|---|---|---|---|
| 240MB* | 2.5" | 14MS | $ 315 | $ 375 |
| 1.2GIG | 3.5" | 8.5MS | $ 695 | $ 755 |

### Seagate — 5 YEAR WARRANTY

| CAPACITY | SIZE | ACCESS | MODEL | EXTERNAL |
|---|---|---|---|---|
| 1.2GIG | 3.5" | 9MS | ST31200N | $ 815 |
| 2.4GIG | 3.5" | 9MS | ST12400N | $ 1525 |
| 2.5GIG | 3.5" | 8MS | Barracuda 2 | $ 1765 |
| 2.5GIG | 3.5" | 8MS | Barracuda 2wide | CALL |
| 3.4GIG | 5.25" | 10MS | Elite 3 | $ 2175 |
| 9.0GIG | 5.25" | 11MS | Elite 9 | $ 4595 |

### CONNER — 5 YEAR WARRANTY

| CAPACITY | SIZE | ACCESS | MODEL | EXTERNAL |
|---|---|---|---|---|
| 330mb** | 3.5" | 12MS | CFA340S | $ 330 |
| 545MB** | 3.5" | 12MS | CFA540S | $ 490 |
| 1.0GIG | 3.5" | 9MS | CFP1060S | $ 815 |

### Quantum — 5 YEAR WARRANTY

| CAPACITY | SIZE | ACCESS | MODEL | EXTERNAL |
|---|---|---|---|---|
| 1.0GIG | 3.5" | 9MS | E1080S | $ 815 |
| 22GIG | 3.5" | 9.5MS | E21680S | $ 1359 |

### HITACHI — 5 YEAR WARRANTY

| CAPACITY | SIZE | ACCESS | INTERNAL | EXTERNAL |
|---|---|---|---|---|
| 3.7GIG | 5.25" | 12.8MS | $ 1645 | $ 1745 |

## MONITORS

| | |
|---|---|
| Sony GDM-17SE1 | $ 1159 |
| Sony GDM-2038S | $ 1995 |
| RasterOps Horizon 24 | $ 2259 |
| RasterOps Paintbd Turbo | $ 1159 |
| RasterOps 8XL | $ 459 |
| RasterOps Li | $ 339 |

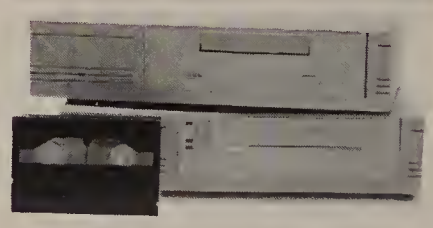
## CD ROMS

| | |
|---|---|
| Toshiba 4101 | $ 275 |
| Toshiba 3401 | $ 439 |
| Sony CDU-561 | $ 385 |
| Ricoh 1000 RECORDABLE CD—MAKE YOUR OWN! | $ 3259 |

## OPTICAL DRIVES FROM $765

1 YEAR WARRANTY

| CAPACITY | MODEL | ACCESS | EXTERNAL |
|---|---|---|---|
| 128MB | Olympus | 30MS | $ 765 |
| 230MB | Fujitsu | 30MS | $ 945 |
| 650MB | Ricoh Hyperspace | 28MS | $ 1799 |
| 1.3GB | Ricoh | 40MS | $ 2459 |
| 1.3GB | Sony | 40MS | $ 2299 |
| 2.0GB | Hitachi | 40MS | $ 2799 |

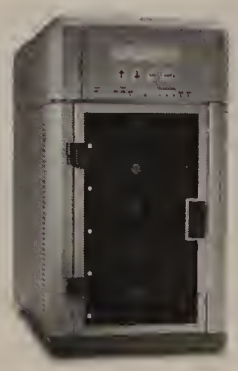


## TAPE BACKUP SYSTEMS FROM $499

INCLUDES TAPE + RETROSPECT SOFTWARE

2 YEAR WARRANTY

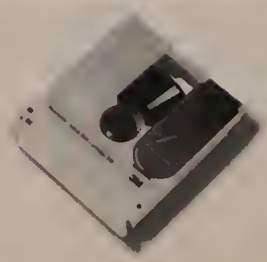
| CAPACITY | MODEL | MEDIA | INTERNAL | EXTERNAL |
|---|---|---|---|---|
| 250MB | Tandberg TDC 3660 | DC6250 | $ 445 | $ 499 |
| 520MB | Tandberg TDC 3660 | DC6250 | $ 565 | $ 625 |
| 2GIG | Archive 4320* | 4MM | $ 839 | $ 899 |
| 8GIG | Archive Turbo* | 4MM | $ 1039 | $ 1099 |
| 4.0-8GIG | Connor 4326 DDS2 | 4MM | $ 1089 | $ 1149 |
| 1.3-5GIG | Exabyte 8205 | 8MM | $ 1539 | $ 1599 |
| 1.3-10GIG | Exabyte 8505 | 8MM | $ 2179 | $ 2279 |
| 4GB | Sony 5200 DDS2 | 4MM | $ 989 | $ 1049 |
| 4.0-8GIG | Sony 5000 DDS2 | 4MM | $ 1129 | $ 1189 |



## RAID SYSTEMS FROM $1399

| | |
|---|---|
| 1.0 GIG RAID | $ 1399 |
| 2.0 GIG RAID | $ 1999 |
| 6.0 GIG RAID | $ 3899 |

• FASTEST RAID FOR VIDEO VISION USERS. 4.0 GIG BARACUDA 2 RAID. $ 4885



## MEDIA

| | | | | | |
|---|---|---|---|---|---|
| 60M | Tape | $ 10 | 128MB | Optical | $ 28 |
| 90M | Tape | $ 12 | 650MB | Optical | $ 79 |
| 112M | Tape | $ 18 | 1.3GIG | Optical | $105 |
| 120M | Tape | $ 22 | 2.0GIG | Optical | $120 |

DIRECT CONNECTIONS 7668 EXECUTIVE DR. EDEN PRAIRIE, MN 55344 * 1 yr warranty. ** 2 yr warranty. Gov't, Corp, and Univ. P.O's accepted. 30 day money back does not apply towards monitors.



Circle 121 on reader service card

DIGITAL AXIS INTERNATIONAL

**17" Trinitron**

**$769**

- Plug & Play with On-Board Video for the Quadras, AVs, Centris, LCIII, **PowerMacs!!**
- WYSIWYG, 832x624, .26mm dot, 75Hz
- 1 Year Warranty
- Dealers, call for volume discounts
- **$1,149** with 24-bit Accl. NuBus Card
- **$1,389** Ikegami CN-20A 20" Multisync

**30-DAY** Satisfaction Guarantee!

One Year Free On-Site Service!

**Kodak ColorEase PS**
Color DyeSub Printer/PS level 2 ..... $6,589

**UMAX Scanners**

| | |
|---|---|
| UMAX 630 -600dpi | $579 |
| UMAX 840 -800dpi | $690 |
| UMAX 1260 -1200dpi | $986 |
| UMAX 1200SE -1200dpi/PhotoShop 2.5.1 | $2,189 |
| UMAX Powerlook-1200dpi/Trans. Adpt./PhtShp | Call |
| PhotoShop 2.5.1 with scanner purchase | $209 |
| PhotoShop LE with scanner purchase | $109 |

UMAX Transparency Adapter **$449**

**PowerBook SCSI Switch**
Includes DOCK & SCSI mode switching
**$31**

**Wacom Digitizer**
12" x 18" Tilt with 2 Handed Input
Calligraphy/Cordless Pen
**$659**
Wacom #UD1218RM

DIGITAL AXIS

**512-329-7001**
**800-691-7111**
Fax 512-327-0921

MW7/94

THE INTERNATIONAL DEALER SUPPORT NETWORK

Corporate and Government P.O.s accepted, Subject to Approval. Wire Transfer, COD

All Major Credit Cards Accepted. UPS, FedEx, DHL 2-day to Europe • 5000 Plaza On The Lake, STE 250, Austin, TX, USA 78746

Circle 83 on reader service card

---

# At Last! The Definitive Reference to Image Editing with Adobe Photoshop 2.5

National Bestseller

16-Page Full Color Photoshop Gallery Inside!

***MACWORLD PHOTOSHOP 2.5 BIBLE*** **GUIDES YOU EXPERTLY THROUGH ELECTRONIC PAINTING, RETOUCHING, SPECIAL EFFECTS, AND MORE!**

Now even novices can explore the creative possibilities of this highly sophisticated graphic design program in a book written expressly for Photoshop 2.5. Author Deke McClelland draws on years of hands-on experience to guide you from Photoshop fundamentals through the most advanced techniques, including retouching and complex electronic imaging. Concise, well-organized chapters cover key topics such as getting the most out of Photoshop; working with image file formats; resampling and cropping; paint and edit tool basics; color manipulations, and more.

Get the *Macworld Photoshop 2.5 Bible*, the only Photoshop book officially authorized by *Macworld* magazine, and see what great things you can do with this leading design program!

A contributing editor to *Macworld* magazine, Deke McClelland also writes for *PC World* and *Publish*. He has authored nearly 30 books on desktop publishing and computers.

**ISBN: 1-56884-022-5**
**$29.95 USA/$39.95 Canada**
**690 pages**

Now Covers Photoshop 2.5.1

**30 Day No Risk Guarantee**

Try this book for 30 days at absolutely no risk. If it doesn't help you get more out of Photoshop, return it for a full refund.

IDG BOOKS

IDG Books Worldwide, Inc.
155 Bovet Road, Suite 310, San Mateo, CA 94402
(800) 762-2974, (415) 312-0600 Fax (415) 358-1260

**Order Risk-Free: 1-800-762-2974**

For fastest service, fax your order to (415) 358-1260. Phone 8am to 5pm, PT, or complete and mail the order form. Also available wherever computer books are sold.

**Yes! Please send me:**

| | Qty. | Price | Total |
|---|---|---|---|
| *Macworld Photoshop 2.5 Bible* | | $29.95 | |
| UPS shipping & handling add | | 4.00/Book | |
| Inquire about Rush delivery at extra charge | | Rush | |
| CA residents add applicable county tax, IN & MA residents add 5% tax, NY residents add 7% tax, IL residents add 8.25% tax, Canadian residents add 7% GST tax. | | Tax | |
| | | Total | |

**I Wish to Pay by:**

❑ Check
❑ Visa/MC
❑ Amex
No CODs, U.S. funds only; payment must accompany order.

Card No. (include all numbers) Exp. Date
Signature (necessary to be valid)
Name Company
Street City State Zip
Area Code Phone Number

MWB94

For volume discounts and special orders, please call Tony Real, Special Sales, at 415-312-0644.

# MEGA HAUS

# 1-800-786-1184

- Our 8th year selling quality drives at incredibly low prices.
- 30 Day money back guarantee.
- Fast, friendly, and smart service.
- Lifetime technical support.
- 24 Hour turnaround, 1 year replacement policy.
- We appreciate your business!

## SyQuest — INCREDIBLE SALE!

Complete External Subsystem Includes:
- Syquest drive in an external enclosure.
- 2 year warranty on drive & case.
- 1 FREE Cartridge, & 1 SCSI cable.
- External plug in SCSI terminator.
- Formatting software, and manuals.

88MB $419 105MB $349
200MB $579 270MB $569

## OPTICAL DRIVES

Smart STORAGE SOLUTIONS

- High performance optical drives.
- Ask for your free "Dare to Compare" specification brochure.
- Includes SCSI Manager 4.3 compliant driver, cables, and 1 free disk.

| Capacity | Model | Internal | External |
|---|---|---|---|
| 128MB | SSS128 | $649 | $699 |
| 230MB | SSS230 | $849 | $899 |
| 1.3Gig | SSS1300 | $2399 | $2469 |

## Power HD™

NOW AVAILABLE!
- Hard Drives fine tuned specifically for Power Macintosh computers.
- Includes SCSI Manager 4.3 compliant driver for best performance.

| Capacity | Model | Internal | External |
|---|---|---|---|
| 540MB | PHD540 | $449 | $509 |
| 1050MB | PHD1050 | $769 | $829 |
| 1750MB | PHD1750 | $999 | $1059 |

## MICROPOLIS®

- New AV series hard drives are specifically designed for enhanced digital video and audio performance in applications such as multimedia, desktop publishing, and video editing.
- We will beat any advertised Micropolis price.

| Capacity | Model | Internal | External |
|---|---|---|---|
| 1000MB | MC2210AV | $869 | $939 |
| 1700MB | MC2217AV | $1079 | $1149 |
| 3000MB | MC1936AV | $2159 | $2259 |

## HARD DRIVES

### Quantum™

WE HAVE THE DRIVE YOU WANT AT AN UNBEATABLE PRICE!

| Capacity | Model | Internal | External |
|---|---|---|---|
| 170MB | ELS170S | $179 | $239 |
| 270MB | LPS270S | $238 | $298 |
| 340MB | LPS340S | $275 | $335 |
| 540MB | LPS540S | $389 | $449 |
| 1080MB | EMP1080S | $739 | $799 |
| 1800MB | PD1800S | $969 | $1029 |

| Capacity | Speed | RPM | Buffer | Brand | Warranty | Internal | External | |
|---|---|---|---|---|---|---|---|---|
| 105MB | 19ms | 4464 | 31K | Maxtor | 1 Year | $469 (Type III PCMCIA) | | |
| 170MB | 17ms | 3600 | 32K | Quantum | 2 Years | $179 | $239 | |
| 240MB | 14ms | 4500 | 256K | Fujitsu | 1 Year | $309 (2.5" for Powerbook) | | |
| 270MB | 12ms | 4500 | 128K | Quantum | 2 Years | $238 | $298 | |
| 340MB | 12ms | 4500 | 128K | Quantum | 2 Years | $275 | $335 | |
| 530MB | 13.8ms | 4500 | 256K | Fujitsu | 5 Years | $375 | $435 | BEST BUY! |
| 540MB (LPS) | 12ms | 4500 | 128K | Quantum | 2 Years | $389 | $449 | |
| 540MB (EMPIRE) | 9.5ms | 5400 | 512K | Quantum | 5 Years | $509 | $569 | |
| 1052MB | 8.5ms | 5400 | 256K | Micropolis | 5 Years | $779 | $839 | |
| 1060MB | 9ms | 5400 | 512K | Conner | 5 Years | $749 | $809 | |
| 1080MB | 9.5ms | 5400 | 512K | Quantum | 5 Years | $725 | $785 | BEST BUY! |
| 1080MB | 9.5ms | 5400 | 256K | Fujitsu | 5 Years | $725 | $785 | |
| 1440MB | 9.5ms | 5400 | 512K | Quantum | 5 Years | NEW | CALL | |
| 1690MB | 8ms | 7200 | 1024K | Seagate | 5 Years | $1459 | $1559 | |
| 1750MB | 10ms | 5400 | 256K | Micropolis | 5 Years | $999 | $1059 | |
| 1800MB | 10ms | 4500 | 512K | Quantum | 5 Years | $969 | $1029 | |
| 2145MB | 8ms | 7200 | 1024K | Seagate | 5 Years | $1689 | $1769 | |
| 2148MB | 9ms | 5400 | 512K | Seagate | 5 Years | $1429 | $1529 | |
| 2160MB | 9.5ms | 5400 | 512K | Quantum | 5 Years | NEW | CALL | |
| 3020MB | 11ms | 5400 | 256K | Micropolis | 5 Years | $2139 | $2169 | |

Includes formatting software and cables. We stock multiple bay enclosures for custom configurations.

## SYQUEST DRIVES

| Capacity | Compatible | Model | Speed | Buffer | Warranty | Internal | External |
|---|---|---|---|---|---|---|---|
| 88MB | 44, 88MB | SQ5110C | 20ms | 32K | 2 Years | $369 | $419 |
| 105MB | 105MB | SQ3105 | 14.5ms | 64K | 2 Years | $289 | $349 |
| 200MB | 44, 88, 200 | SQ5200C | 18ms | 64K | 2 Years | $519 | $579 |
| 270MB | 105, 270MB | SQ3270 | 13.5ms | 128K | 2 Years | $509 | $569 |

Media Qty 1 / 5 88MB $96 / $89ea. 105MB $58 / $56ea. 270MB $93 / $89ea.

INCLUDES 1 CARTRIDGE, formatting software, and cables. Multiple Syquest drive towers in stock!

## CD ROM DRIVES

| Brand | Model | Speed | Transfer | Type | Internal | External | |
|---|---|---|---|---|---|---|---|
| Teac | CD-50 | 265ms | 335KB/sec | Single disk | $299 | $359 | |
| Toshiba | XM3401 | 200ms | 330KB/sec | Single disk | $349 | $409 | |
| NEC | CDR510 | 195ms | 450KB/sec | Single disk | $439 | $499 | BEST BUY! |
| Pioneer | DRM-602X | 300ms | 307KB/sec | 6 Disc Changer | n/a | $919 | |
| Pioneer | DRM-604X | 300ms | 614KB/sec | 6 Disc Changer | n/a | $1169 | |
| Pioneer | DRM-1804X | 300ms | 614KB/sec | 18 Disc Changer | n/a | $2099 | |

Includes driver software with music play, $25 Photo CD processing coupon, and cables. Multi Drive CD Towers in stock!

## TAPE DRIVES

| Capacity | Type | Brand | Speed | Internal | External | |
|---|---|---|---|---|---|---|
| 250MB | QIC 150 | Archive | 7MB/min | $459 | $529 | |
| 2Gig | DAT | Conner | 11MB/min | $839 | $899 | |
| 4-8Gig | DAT | Conner | 88MB/min | $1269 | $1329 | |
| 4-8Gig | DAT | Hewlett Packard | 42MB/min | $1089 | $1109 | |
| 4-10Gig | DDS-2 DAT | Sony | 88MB/min | $1139 | $1199 | BEST BUY! |
| 4-10Gig | DDS-2 DAT | HP (Fastest Tape!) | 88MB/min | $1449 | $1499 | |

Includes Retrospect 2.0, 1 tape, and cables. OPTIMA DeskTape Software mounts DAT on desktop $289.

## OPTICAL DRIVES

| Capacity | Speed | Brand | Cache | Feature | Internal | External |
|---|---|---|---|---|---|---|
| 1.3Gig | 23ms | Hewlett Packard | 512K | MultiFunction | N/A | $2679 |
| 1.3Gig | 19ms | Maxoptix | 4MB | MultiFunction | N/A | $2799 |

Includes formatting software, 1 disk, and cables. 256MB Fujitsu and 650MB HP models also in stock.

MEGA HAUS HARD DRIVES

1-800-786-1184
M-F 8-7 Sat 9-3 Central
Local (713)333-1910
Fax (713)333-3024
No International orders accepted.

CODE MW81

MasterCard DISCOVER VISA AMERICAN EXPRESS

1110 NASA Rd. 1 #306
Houston, Texas 77058

Prices and specifications subject to change. All trademarks are registered trademarks of their respective companies. Returns must be in new condition, and may be subject to restocking fee. Shipping is not refundable.

Circle 245 on reader service card

GERMANY JAPAN ROMANIA UNITED STATES FRANCE ARGENTINA

# Congratulations

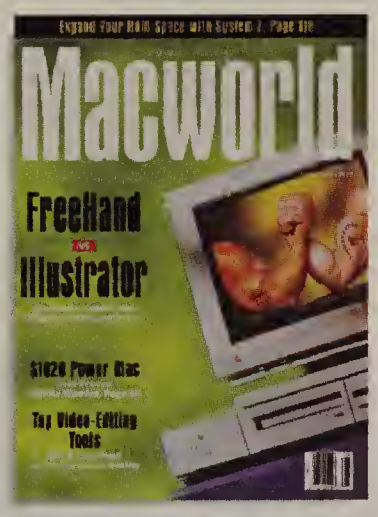
## to the Winners of the 9th Annual Computer Press Awards!

Best Computer Magazine (Circulation more than 100,000)

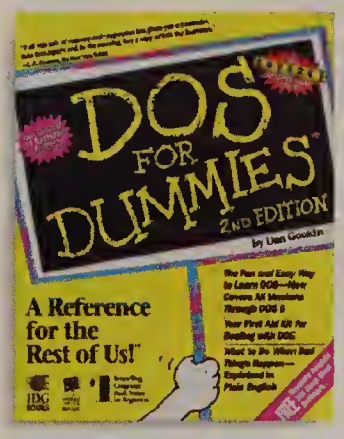
Best Computer Newspaper (Circulation more than 100,000)

Best News Story in a Computer Publication ("DOS 6.0" by Stuart Johnson, Doug Barney and Kevin Strehlo)

Best Computer Columnist (Deborah Branscum, "Conspicuous Consumer")



Best Advanced How-to Book: Systems




Best Introductory How-to Book: Software

Once again, IDG dominated the annual Computer Press Awards, winning more awards than any other publishing company. If you're looking for editorial excellence in information technology publications, IDG is where you find it.

IDG
INTERNATIONAL DATA GROUP
Where you find I.T.

POLAND HUNGARY PANAMA BULGARIA SWEDEN DENMARK FINLAND INDIA

KOREA PHILIPPINES SINGAPORE THAILAND CANADA AUSTRIA

## PRODUCT INDEX


| Category | Page No. |
|---|---|
| **ACCESSORIES** | 239 |
| Covers | |
| Computer Mouse Pads | |
| Diskettes | |
| **BUSINESS TOOLS** | 218-220 |
| Bar Code | |
| Credit Authorization | |
| Point of Sale | |
| Real Estate | |
| Manufacturing | |
| **EDUCATIONAL & RECREATIONAL** | 240-241 |
| Astrology | |
| College Guide | |
| Degree Program | |
| Discount Software | |
| Genealogy | |
| Grading | |
| Music | |
| Religion | |
| **GRAPHICS** | 244 |
| 3D | |
| CAD/CAM | |
| Clip Art | |
| Fonts | |
| Graphics Translators | |
| Magazine | |
| **MOBILE COMPUTING & PDA's** | 239 |
| Battery Charger | |
| PowerBook Accessories | |
| **MULTIMEDIA & CD-ROM** | 241-243 |
| Quicktime Flipbook | |
| **NETWORKING & COMMUNICATIONS** | 239 |
| BBS | |
| **PROGRAMMING & UTILITIES** | 245 |
| Data Compression | |
| Languages | |
| **SERVICES & SUPPLIES** | 246-247 |
| Computer Insurance | |
| Computer Repair | |
| Data Recovery | |
| On-Line Services | |
| Prepress Services | |
| Slides | |
| **SPECIALIZED MARKETS** | 245 |
| Languages | |
| Math | |
| Medical | |
| **SYSTEMS & PERIPHERALS** | 220-237 |
| Printers | |
| **UPGRADES & MEMORY** | 233-238 |
| Accelerators | |


**ACCOUNT MANAGERS:** 800.888.8622
- Carol Johnstone . . . . . 415.978.3152
- Shannon Smith . . . . . 415.974.7414
- Niki Stranz . . . . . 415.978.3105

**DTP COORDINATOR:**
- Clayton Haberman . . . . . 415.978.3132

OVER
1/2 MILLION
ACTIVE BUYERS FIND
WHAT THEY ARE
LOOKING FOR
IN THE
MACWORLD
SHOPPER SECTION.
Macworld SHOPPER


# BarCode Labeler™ II
*for the Macintosh*

When you need easy to use, full-featured bar code printing software for the Macintosh, look to BarCode Labeler II. This package allows you to easily create, edit, and print bar codes in all the popular bar code symbologies.

BarCode Labeler II makes merging text or graphics into your bar code simple. Sizing and movement capabilities give you the flexibility to develop what you want in a bar code or label.

Call us today for information on BarCode Labeler II.

**Retail price: $149.00**

1105 N.E. Circle Blvd., Corvallis, OR 97330
503-758-0521 • Fax 503-752-5285

Videx

Videx is a registered trademark and BarCode Labeler is a trademark of Videx, Inc. GCO466

CIRCLE 545 ON READER SERVICE CARD



AMERICAN EXPRESS · MasterCard · VISA · A MEMBER OF AIM USA

## The Recognized Macintosh Bar Code Experts

**UniScan-300 ADB Bar Code/Mag Stripe Reader** $369
*(Industry's only lifetime warranty)*
Complete with wand & bar code printing software
Compatible with all Macs from 128K to current models.
Inventors of keyboard interface bar code reader for Macintosh.
**PDCS-300 Portable System** *(1 year warranty)* $999
Includes wand, communications software, cable, battery & AC adapter.
256K storage (128K RAM & 128K Flash EPROM) upgradeable to 1 meg.
Data collection program included · Inexpensive program generator

**30-Day Money-Back-Guarantee on All Products**
**Established 1978 · Newton Scanners and Software Available Now!**
**Discounts for Resellers, Schools, Non-Profit & Government Agencies**

TPS Electronics
2495 Old Middlefield Way, Mtn. View CA 94043
(415) 988-0141 Fax (415) 988-0289
(800) 526-5920 AppleLink: BARCODE

CIRCLE 441 ON READER SERVICE CARD

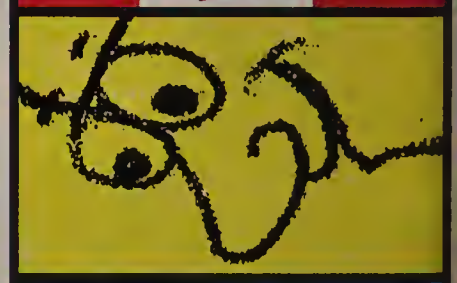


## Mac-Barcode® ProLabel
Version 2.0
Not a Font...A True Label Application!
Now Featuring UCC/EAN-128 for Compliance Labeling
The Best Macintosh® Bar Code Label Software Just Got Better! Design and Generate Bar Code Labels Using U.P.C., EAN, Bookland, and 7 More Symbologies Including UCC/EAN-128 (with AIs). The New York Times Says "Mac-Barcode Is Both Easy to Use and Versatile."
Call for Product Literature & Demo Disk.
800-733-7592
The Mac-Barcode Co.
FAX 617-934-6233
P.O. Box 1814,
Duxbury, MA 02331
Scanners and Printers Too !

CIRCLE 562 ON READER SERVICE CARD



Macworld SHOPPER



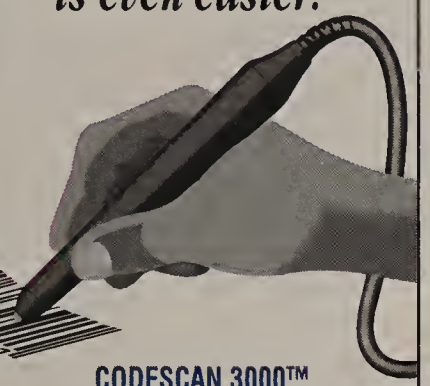
HOT SHOPPER
PRODUCT CATEGORIES
HELP BUYERS
FIND THE PRODUCTS
THEY NEED FAST.

*Creating precision bar codes is as easy as using a font!*

**PRINTBAR™ BAR CODE FONTS**

- Compatible with virtually any Macintosh application.
- Choose from: • UPC/EAN/ISBN • Code 39 • Interleaved 2 of 5 • POSTNET/FIM.
- 90-day money back guarantee.
- *"This is the best product of its kind, and it's reasonably priced too"* —MacUser review ★★★★½

*Scanning bar codes is even easier!*



**CODESCAN 3000™ BAR CODE READER**

- Comes complete with wand and 5 year warranty.
- Scans information directly into software application.
- Available with laser gun, CCD, badge slot, magstripe options.
- No software required. Ready to use in minutes!
- Money back guarantee.

Bear Rock TECHNOLOGIES

*Bundle discounts available.*

4140 Mother Lode Dr., Ste. 100, Shingle Springs, CA 95682
916 672-0244 · Facsimile 916 672-1103

*Call the Bar Code Experts*

800 232-7625



SYNEX

**BAR CODE PRO™**

"Installs in 60 sec. and takes less than five minutes to master" — MacWorld !

Bar Code Pro™ creates color EPS or PICT graphics for use with Quark™ or PageMaker™ (to name a few) for packaging, coupons, CDs, labeling, libraries, inventory, or publishing. Versions: UPC (A), UPC (E), Code 39, EAN, EAN-128, ISSN, ISBN, POSTNET, FIM, Code 128, Codabar, MSI/Plessey, ITF, Pharmacode

ALL NEW VERSION 2.0

0 012345 7

(800) 447-9639
FAX: (718) 768-3997

INTERNT'L CALL: (718) 499-6293



**Label Press™**

Label Printing Software Tamed!

Introducing the most sophisticated, easy-to-use, bar code label printing utility ever. **Label Press** includes hundreds of Avery templates and industry standards such as KMart, JCPenney, UPS, Fed EX and many more. For any Mac compatible printer.

For industrial label printing **Label Press Thermal** Works with all Intermec, Fargo Datamax, and Zebra printers.

SYNEX (800) 447-9639

CIRCLE 450 ON READER SERVICE CARD



**Business Tools**

Job Tracking — Made-2-Order™
Manufacturing — InQuire/Mac™
Forecasting — NEW!

New Hybrid Solutions • Relational Database
AppleScript Ready • Easy-to-Use Interface

Inventory
Purchasing
Estimating
Order Entry
Bill of Material
Custom Forms
MRP

OnBase Technology, Inc.
Interface...Database...OnBase

Call Now for Demo
800-782-5682
714-830-5682 FAX 830-5691

OK

CIRCLE 479 ON READER SERVICE CARD



**Cash On Your Screen!**

Credit Card Authorization & Electronic Deposit

*MacAuthorize™*

- Automatically authorizes and deposits all credit card sales—individually or in batches
- Save time and money, eliminate credit terminals
- Certified on all major bank networks
- Handles all credit cards plus check guarantee
- Supports AppleEvents & Import/Export
- Supports card readers & receipt printers
- Instant totals, discount rates, printed reports, etc.
- Database and file searching
- Many more features

POS Credit Developers since 1981

800-4-TELLAN • 408/274-1110 • Tellan Software, Inc.

CIRCLE 480 ON READER SERVICE CARD



**Barcode Generation**

MacBARCODA

*With a color option that works*

All the vital features for **high-quality** bar code production. Compatible with all major page-makeup and graphics software. The highest precision barcoding package available for the Mac.

**Bar Code Readers**

For Mac or PC. Connects between keyboard and computer. Works with any software package. All major bar codes supported.
Wand Reader **$ 255**

**Label Printing on Sheets**

Version 2.0 of the easy to use PostScript label printing package. Any label size and sheet layout with bar codes, text, graphics, sequential numbering and mail merge.

LabelDesigner

**Label Printing on Reels**

The easiest option for printing short-run multi-variation labels on reels with powerful text, graphics, and bar code facilities. Compatible with Zebra thermal printers

macthermal

Computalabel

*Call Toll Free -* **800-289-0993**

28 Green Street, Newbury MA 01951 Fax 508-462-9198

CIRCLE 544 ON READER SERVICE CARD



**Take Control**

Complete Systems Start at

**$2,799**

Taking control of your business is easy with a system that has been designed and proven by thousands of retailers just like you. POS•IM provides full POS and Inventory Management functionality with the features you need at an outstanding price.

**POS•IM**
Point-of-Sale • Inventory Management

The One That Apple® Uses

Ensign Systems, Inc.
(801) 546-1616

CIRCLE 551 ON READER SERVICE CARD

# Bar Code Headquarters

## Labeling Software

Now with PostNet

- 65 PostScript Type 1 Bar Code Fonts – As easy to use as Times or Helvetica
- Use in any program with a font menu
- Code 39, UPC/EAN, 128, I 2of5, PostNet
- Not HyperCard Dependent because they're fonts
- Simple, Easy-to-Use, Plug & Play!
- Create 1,000 incremented bar codes in 5 seconds or translate your list using Sequencer™ DA
- Generate film masters in Quark, PageMaker, etc.
- **$199** includes our DA, All Fonts and Manual

## Bar Code Readers

New RF Wand

for all Macintosh ADB or Serial

- Attaches thru ADB as 2nd Keyboard in seconds.
- UPC/EAN, Code 128, 2of5, Code 39, Interleaved 2 of 5
- Wand, Magstripe, CCD, Laser, Slot Badge

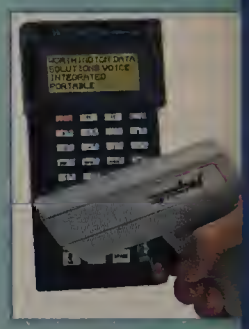
- All European Keyboards Supported
- **Top Rated by Independent Reviews**
- Complete Reader with Cordless RF Wand – **$695**
- Complete Reader with CCD Scanner – **$624**
- Complete Reader with Corded Steel Wand – **$329**

## Portable Readers

With Voice Prompts

for all Macintosh ADB or Serial

- 64K or 256K RAM. Keyboard or serial upload.
- Download Tables
- Wand, CCD or Laser Input
- UPC/EAN, 128, 2of5, MSI, Code 39, etc.
- 4 x 20 LCD, 35 Keys
- 2 Built-in Inventory Programs
- Optional Voice prompts and error msgs. You record!
- Double duty as non-portable
- Very easy to program & interface with applications
- Complete 64K Unit with Wand & Voice – **$799**



## Ordering is Easy!

- 30 Day Money Back Guarantee
- Qualified P.O's Accepted
- 2 Year Warranty on Readers
- Same Day Shipping
- Free UPS Blue in US

Call for Our Catalog

**800-345-4220**

or call 408-458-9938 • FAX 408-458-9964
In Europe call our Irish Office at 00 353 1 6614 566

WORTHINGTON
DATA SOLUTIONS

---

FAST
MAIL ORDER
Distribution
POINT-OF-SALE
SYSTEMS

POS/OE 4 MAC™

- ORDER ENTRY
- BARCODING
- INVOICING
- MULTI-USER
- FAST CASH RETAIL
- CREDIT CARD PROCESSING
- PURCHASE ORDER
- INVENTORY CONTROL
- DEMO available

EES Companies Inc

**800 - 508 - 4444**
TEL 508.653.6911 FAX 508.650.1872

CIRCLE 600 ON READER SERVICE CARD

---

**Mac Landlord $399**

Upgraded version 2.2 now available. Still the Easiest-to-use property management program for multiple properties & unlimited units. Includes tenant and unit records, recurring income and expense, check writing, checkbook balancing, printing tenant notices, income and expense ledgers, and much more. Free telephone support. Demo for $25, credited to purchase.

*Labana Management Company*
*P.O. Box 2037*
*Dearborn, MI 48123*
*313/562-6247*

---

POINT OF SALE
INVENTORY CONTROL

- Retail
- Manufacturing
- Educational
- Service Industry
- Vertical Markets

Bar-Code Readers from $289.00
3" CCD w/Internal Decoder - Only $389.00
Receipt Printers • Cash Drawers
Credit Card Auth. • Port. Data Collection
UPS Manifest SW • Accounting

call or fax for a FREE CATALOG
(800) 622-7670
(618) 985-8237 TEL • (618) 985-3014 FAX

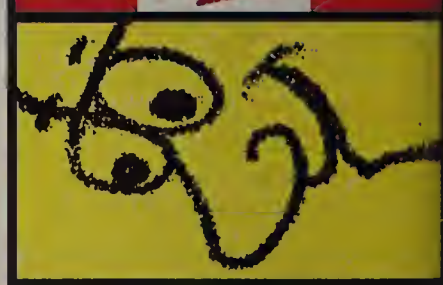
Dealer Inquiries Welcome
30 day MBG

P.O.S. → DIRECT

CIRCLE 466 ON READER SERVICE CARD

---

Macworld SHOPPER



HOT SHOPPER
PRODUCT CATEGORIES
HELP BUYERS
FIND THE PRODUCTS
THEY NEED FAST.

---

Other World Computing

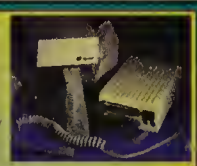
(800)275-4576
M-F 9am - 8pm CST and Sat. 11am - 5pm
Internat'l (815) 338-8658
Fax (815) 338-4332
224 West Judd St.
Woodstock, Illinois 60098

We Will Match Your Best Price!
School, Government and Corporate POs Accepted!

### Hard Drives

We offer both external and internal hard drives specifically for the Macintosh Computer. All hard drives include:

- 30mb of ShareWare and System 7.1 installed
- All necessary cabling
- Anubis award winning SCSI Formatting Utility
- Internal drives also include the necessary mounting and connecting hardware.



- 30-Day Money Back Guarantee
- 2 Year Warranty on Drives From 170-340mb.
- 5 Year Warranty on Drives From 540-1800mb.
- All 1/3 height drives will fit internally in any Mac / PowerMac computer produced after the Mac Plus

**QUANTUM**

| | Internal / External |
|---|---|
| 170mb. (11ms) 3.5" LPS 1/3 height | $199 / $249 |
| 170mb. (17ms) 2.5" GLS Notebook | $279 / $349 |
| 256mb. (17ms) 2.5" GLS Notebook | $339 / $399 |
| 270mb. (11ms) 3.5" LPS 1/3 height | $269 / $319 |
| 340mb.(11ms) 3.5" LPS 1/3 height | $299 / $349 |
| 540mb.(11ms) 3.5" LPS 1/3 height | $399 / $449 |
| 540mb. (9.5ms) 3.5" Empire 1/3 height | $489 / $539 |
| 1080mb. (9.5ms) 3.5 Empire 1/3 height | $719 /$769 |

NEW 1440mb. & 2160mb. 3.5" 1/3 height - Call for latest price!

### Micropolis Hard Drives

| | Internal / External |
|---|---|
| 4410 1.0gig. (8.5ms) 3.5" 1/3 height | $ 799 / $ 849 |
| 2217av 1.7gig. (10ms) 3.5" 1/2 hgt. | $1,109 / $1,169 |
| 2217 1.7gig. (12ms) 3.5" 1/2 hgt. | $1,029 / $1,079 |
| 2210av 1.0gig. (10ms) 3.5" 1/2 hgt. | $ 929 / $ 989 |

All Micropolis drives carry a 5 year Warranty

### Memory & Expansion

| | 70ns / 60ns |
|---|---|
| 4 Meg 72 Pin SIMM | $139 / $145 |
| 4 Meg 30 Pin SIMM | $145 / $149 |
| 8 Meg 72 Pin SIMM | $299 / $299 |
| 8 Meg 30 Pin SIMM | $299 / $329 |
| 16 Meg 72 Pin SIMM | $579 / $619 |
| 16 Meg 30 Pin SIMM | $629 / $659 |
| 32 Meg 72 Pin SIMM | $1,129 / $1,189 |
| 32 Meg 30 Pin SIMM | $1,159 / $1,209 |

WE HAVE BLACKBIRD MEMORY!
Also in stock: PowerBook and Duo Memory upgrades from 4 to 32 Meg Modules
**All memory has a Lifetime Warranty.**

### CD-ROM Drives

| | |
|---|---|
| Apple CD300i (external) | $359 |
| Apple CD300i (internal) | $299 |
| NEC MultiSpin 3Xp (external) | $499 |
| NEC MultiSpin 4X (external) | $949 |

### CD-ROM DISCS

Xplora I:

| | |
|---|---|
| Peter Gabriel's Secret CD-ROM World | $49.95 |
| -Groliers Multi-Media Encyclopedia | $89.95 |
| -Random House Unabridged Dictionary | $69.00 |
| -Mac Cocktail | $49.95 |

*Call for a complete listing of CD-ROM titles to be faxed or mailed to you.*

### NCD MAC CPU Accelerator

Increases CPU and Graphics speed of your Centris 610, Centris or Quadra 660av, Quadra 650, and Quadra 800 by as much as 40%. No soldering or special skills required and the NCD CPU Accelerators are easily removable.

**Only for C-Q660av, C610, Q650, Q800 $99**

Centris / Quadra 610 25Mhz w/ FPU upgrade only $199
33Mhz w/ FPU upgrade for $349

Mass Micro 24-bit NuBus Video Digitizing Card

The QuickImage 24 card allows your NuBus equipped Macintosh to preview and capture 24-bit color or 8-bit grayscale images from a wide range of NTSC or PAL video input sources, including camcorders, VCRs, videodisc, and still video cameras via the built in composite and S-Video inputs. QI-24 can capture 24-30 Frames Per Second. The QI-24is QuickTime Compatible and System 7 Savvy.

**$69 with any other purchase**
**$79 purchased separately**

CIRCLE 553 ON READER SERVICE CARD

**We Carry New Products Only!**

5 Free CD's With Purchase of every CD Based System

**To Order Call: 1•800•223•4622**

**Other Inquires & International Orders:**

**TEL: 818 • 708 • 6388 FAX: 818 • 708 • 6399**

**WE install your memory...., internal syquest...., Internal optical...., internal DAT.., and test all components together before shipping your custom configured system.**

**Please call us for the lowest price on Quadra**

**605, 610, 660av, 650, 840av, 950**

PageMaker 5.1 $250 With Purchase of every CPU

## PowerMac 8100, 80MHz

8MB/250 MB HD ..... 3699
(AV)/24/1G HD/Apple CD . 5549
16MB/1Gig HD/Apple CD . 4759
16MB/500MB/SoftWindow 4529
40MB/1Gig/Syquest 200MB/Ext. key ..... 5799
136MB/2.4Gig/SuperMac Press View 21/ CD .... **13299**
24 bit Color with Display Resolution of 1152 X 87

## PowerMac 7100, 66MHz

8MB/250 MB HD ..... 2779
(AV)/16/1G HD/Apple CD . 4263
16MB/500 HD/Apple CD ... 3689
16MB/250MB/SoftWindow 3360
24MB/1Gig/Syquest 88c/Ext. key ..... 4389
40MB/1Gig/Sony 17SE/Apple CD ..... **5699**
16 bit color with Display Resolution of 1024 X 768

## PowerMac 6100, 60MHz

8MB/160 HD/Apple CD ..... 1855
(AV)/16/1G HD/Apple CD . 3344
16MB/500 HD/Apple CD ... 2540
16MB/250MB/SoftWindow 2376
8MB/160HD/Apple Color Plus & CD/Ext. key ..... 2204
16MB/500 HD/CD/Apple 17/Ext Key ..... **3569**
16 bit color with Display Resolution of 640X480

## PowerBooks 520 / 520C 520 / 520C

4MB•160 MB HD..... 2033/2595
8•240•19.2 Modem .. 2828/3377
20MB•320 MB HD ... 3055/3655
12•320•19.2 Modem 3095/3555

## PowerBooks 540 / 540C 540 / 540C

12MB•240 MB HD ... 3199/4469
8•240•19.2 Modem .. 3399/4745
20MB•320 MB HD ... 3711/4995
12•500•19.2Modem . 3939/5195

## DUO 280 / 280C 280 / 280C

4MB•240 MB HD..... 2366/3199
8•320•14.4 Modem .. 3099/3955
18MB•320 MB HD ... 3177/3930
12•500•14.4Modem . 3378/4177

## Apple Printers

Select 310/320/360 .. 799/895/1499
Pro 810 / 630 ..... 4650/1999
Stylewriter/Color ..... 299/595
Portable Stylewriter ..... 405

## 72 Pin Memory

| | 80ns | 70ns | 60ns |
|---|---|---|---|
| 8Meg | 280 | 289 | 299 |
| 16Meg | 550 | 565 | 595 |
| 32Meg | 1088 | 1135 | 1155 |

## NIKON COOLSCAN

External/Internal ..... 1759/1590

## Pinnacle Micro Optical

Taho 130/Sierra 1.3GB ... 945/2649
Recordable RCD 202 ..... 3295

## Radius

Precision 20V/Pivot 15" ... 1569/821
Intellicolor 20/17"Color .. 1769/1195
2 Page 21GS/Full page ..... 939/479
Precision 24X/ Pro 24X ... 869/1279

## SuperMac

Thunder IIGX Line-up
1152/1360/1600 ... 1994/2511/3159
Spec. Power•1152 ..... 1122
Press View 21 ..... 3100
SuperMatch 21/20•TXL . 2093/1969
SuperMatch 17•T/17XL ..... 999/939
SuperMatch 20 Plus ..... 1549

## HP

Laser 4M/4ML/4MP 1895/995/1395
Deskwriter 550c/560c .. 499/595
Deskwriter 520/310 ..... 335/355
Deskjet 1200cps ..... 2095

## NEC

3FGE/4FGE/5FGE ... 569/631/1019
5FGP/6FGP/3V . 1115/1999/477

## PLI

Infinity 88c/200 ..... 488/Call
Infinity Optical 128 ..... 969

## Microtek Scanners

IIG/II/IISP/IIXE ..... 440/599/749/841

## Sony Monitors

17SE/GDM 2038 ..... 1166/1995

## UMAX Scanners

840/1260/1200SE .. 852/1137/2513

## Texas Instruments Microwriter

PS23/PS65 ..... 695/949

6924 CANBY AVE. UNIT #104 RESEDA CA. 91335• Prices are subject to change without notice
• All Returns are subject to restocking fee, must be in original package, condition & needs an RMA#
• Visa, MC & Discover Add 2%

CIRCLE 420 ON READER SERVICE CARD

# MacLink

Your Link to Lower Prices

**800-858-4622**

Dealers, Int'l & in CA
Call 818-785-2800

FaxQuote: 818-785-3100

Business Leasing Available

Government & Corporate POs Welcomed

Over $10,000,000 Inventory to choose from Worldwide Computer Distributor for 8 years

**ALL Prices 5% Above Verified Cost • Volume Discounts Available**

American Express Card · VISA · CODs on Approval · MasterCard · Discover

## Displays

| | |
|---|---|
| Apple 20" Multiple Scan | $1879 |
| Apple 17" Multiple Scan | $985 |
| Apple 14" AV Color Display | $635 |
| Apple 14" Trinitron Display | $389 |
| Apple 14" Color | $195 |
| Supermac PressView 21 | $3270 |
| Supermac 21•TXL | $2105 |
| Supermac 20•TXL | $1995 |
| Supermac 17•T | $924 |
| RaserOps 20/20 | $1579 |
| RaserOps ClearVue/15 | $489 |
| Radius IntelliColor/20 | $1899 |
| Radius PrecisionColor 17 | $1039 |
| Radius TPD/20GS | $890 |
| NEC 5FGp | $1175 |
| Sony 17SE1 | $1200 |
| ALL Unlisted Models | $call |

## Printers/Scanners

| | |
|---|---|
| Apple LaserWriter Pro 810 | $4261 |
| Apple LaserWriter Pro 630 | $1895 |
| Apple LW Select 360 | $1491 |
| Apple LW Select 320 | $850 |
| ALL Hewlett Packard | $call |
| GCC SelectPress 1200 | $5890 |
| GCC SelectPress 600 | $3630 |
| Agfa Arcus Plus scanner | $2699 |
| Supermac ProofPositive | $6400 |
| All LaserMaster | $call |
| All NewGen | $call |
| 3M RAINBOW 2720 | $20K |
| Hewlett Packard IIcx | $990 |
| UMAX 1260 | $1150 |
| UMAX 840 | $885 |
| UMAX 630LE | $695 |
| Transparency Adapters | $call |

## Quadra

CUSTOM CONFIGURATIONS CALL

| | |
|---|---|
| Quadra 950, 8-0 | $2875 |
| Quadra 840AV, 16-1000 w/CD | $4200 |
| Quadra 840AV, 8-500 w/CD | $3300 |
| Quadra 840AV, 8-230 w/CD | $2999 |
| Quadra 840AV, 8-230 | $2799 |
| Quadra 660AV, 8-500 w/CD | $2050 |
| Quadra 660AV, 8-230 w/CD | $1575 |
| Quadra 660AV, 8-230 | $1356 |
| Quadra 650, 8-500 w/CD | $2550 |
| Quadra 650, 8-230 w/CD | $2155 |
| Quadra 650, 8-230 | $1855 |
| Quadra 610, 8-230 w/CD | $1895 |
| Quadra 610, 8-230 | $1585 |
| Quadra 610, 8-160 w/DOS | $1455 |
| Quadra 605, 8-160 | $989 |
| Quadra 605, 4-160 w/SW | $950 |

## PowerMac

| | |
|---|---|
| 8100/80, 72-2.4 GB w/CD | $7650 |
| 8100/80, 16-1000 w/CD | $5275 |
| 8100/80AV, 16-500 w/CD | $4850 |
| 8100/80, 16-500 w/SW | $4565 |
| 8100/80, 8-250 w/CD | $3875 |
| 8100/80, 8-250 | $3650 |
| 8100/80, 8-0 | $3498 |
| 7100/66, 16-250 w/SW | $2935 |
| 7100/66AV, 8-500 w/CD | $3470 |
| 7100/66, 8-250 w/CD | $2765 |
| 7100/66, 8-250 | $2525 |
| 6100/60, 16-250 w/SW | $2190 |
| 6100/60AV, 8-250 w/CD | $2260 |
| 6100/60, 8-250 w/CD | $1989 |
| 6100/60, 8-500 | $1985 |
| 6100/60, 8-160 | $1579 |
| Call for Other Config's | $AVE |

## PowerBook

CUSTOM CONFIGURATIONS CAL

| | |
|---|---|
| Pwrbk 540c, 12-320 w/modem | $4760 |
| Pwrbk 540c, 4-320 | $4195 |
| Pwrbk 540, 12-240 w/modem | $3397 |
| Pwrbk 540, 4-240 | $2797 |
| Pwrbk 520c, 4-160 | $2570 |
| Pwrbk 520, 4-160 | $2065 |
| Duo 280c, 12-320 w/modem | $3777 |
| Duo 280c, 4-320 | $3335 |
| Duo 280, 12-240 w/modem | $2845 |
| Duo 280, 4-240 | $2380 |
| Duo 250, 4-200 | $1579 |
| Duo 230, 4-80 | $1175 |
| Duo Dock 230 | $575 |
| Duo Dock | $445 |
| Pwrbk 145B, 4-80 | $1140 |
| Pwrbk 165, 4-80 | $1375 |
| Pwrbk 165, 4-160 w/modem | $1550 |

## CD-ROM

| | |
|---|---|
| CHOOSE ANY 3 LISTED... | $99 |
| Grolier's MM Encyclopedia | $99 |
| The Animals | $39 |
| Oceans Below | $29 |
| Space Shuttle | $29 |
| Capital Hill | $29 |
| US Atlas | $39 |
| World Atlas | $59 |
| Fauna | $19 |
| Desert Storm | $19 |
| The Orchestra | $59 |
| View From Earth | $59 |
| Word Tales | $39 |
| Supertoons | $29 |
| Quicktoons II | $29 |
| Great Business Jokes | $29 |
| Mac Product Registry | $49 |

## Audio/Video

| | |
|---|---|
| Supermac T-II GX1360 | $2450 |
| Supermac Spectrum 1152 | $1139 |
| Radius P'Color Pro 24X | $1315 |
| Radius P'Color 24XP | $499 |
| RasterOps 24XLi | $999 |
| RasterOps Paintboard Li | $785 |
| RasterOps MoviePak 2 | $3989 |
| Radius VideoVision Studio | $3190 |
| Seagate "Barracuda" 2 | $1790 |
| Seagate "Barracuda" 1 | $1260 |
| Data Translation Media 100 | $AVE |
| Micropolis 1.7GB | $1199 |
| PLI 88 WR44 | $479 |
| DIGIDESIGN Pro Tools | $4799 |
| DIGIDESIGN Sound Tools II | $2799 |
| DIGIDESIGN Audiomedia II | $990 |
| AND MORE..... | $CALL |

ALL Prices reflect Cash Discount and are subject to change

MacLink • 15500 Erwin St #2002 • Van Nuys CA 91411

CIRCLE 535 ON READER SERVICE CARD

---

# MAC PROFESSIONAL

SINCE 1988

*THE RIGHT SOURCE*

WE SELL BRAND NEW PRODUCTS WITH FULL 1 YEAR PARTS AND LABOR WARRANTY.
ALL PRICES ARE C.O.D. & SUBJECT TO CHANGE.NO TAX OUTSIDE CA
19801 VENTURA BLVD. WOODLAND HILLS, CA 91364.

(818) 719-9200
(FAX) 719-9115

## POWER MAC

| | | |
|---|---|---|
| 8100 | 16/250 | 3987 |
| 8100 | 24/500 | 4447 |
| 8100 | 40/1000 | 5377 |
| 8100 | 72/1.8 G | 6777 |
| 8100 AV | 16/500 CD | 4997 |
| 8100 AV | 40/1.8 G | 4997 |
| 8100 | SOFT WIN | CALL |
| 7100 | 16/250 | 2847 |
| 7100 | 24/500 | 3277 |
| 7100 | 40/1000 | 4297 |
| 7100 AV | 16/500 CD | 3847 |
| 7100 AV | 40/1.8 G | 4777 |
| 7100 | SOFT WIN | CALL |
| 6100 | 8/230 | 1777 |
| 6100 | 16/25 CD | 2277 |
| 6100 | 24/500 | 2477 |
| 6100 AV | 8/250 CD | 2347 |
| 6100 AV | 16/500CD | 2877 |
| 6100 | SOFT WIN | CALL |

## CAMERA

| | |
|---|---|
| QUICKTAKE 100 | 717 |

## QUADRA

| | | |
|---|---|---|
| 950 | | CALL |
| 840 AV | 8/230-CD | 2987 |
| 840 AV | 16/500 | 3297 |
| 840 AV | 40/1000 | 4497 |
| 840 AV | 64/1.8-G | 5577 |
| 650 | 8/250 | 1977 |
| 650 | 16/500 | 2477 |
| 650 | 32/1000 | 3297 |
| 650 | 40/1.8-G | 3977 |
| 660 AV | | CALL |
| 610 | | CALL |
| 605 | | CALL |
| 610 DOS | 8/160 | 1527 |

## POWER MAC UP-GRADE

| | |
|---|---|
| UP-GRADE CARD | 677 |
| 6100 / 6100 AV | 1377 |
| 7100 / 7100 AV | 1677 |
| 8100 / 8100 AV | 1977 |

## SYQUEST

| | |
|---|---|
| 88/44C | 447 |

## POWER BOOKS

| | | |
|---|---|---|
| 520 | 8 / 160 | 2377 |
| 520 | 12 /240 | 2677 |
| 520 | 24 / 340 | 3177 |
| 520 C | 8 / 240 | 2997 |
| 520 C | 8 / 160 | 2897 |
| 520 C | 12 / 340 | 3347 |
| 540 | 4 / 240 | 2897 |
| 540 | 8 / 340 | 3297 |
| 540 | 12 / 540 | 3777 |
| 540 C | 4 / 240 | 4177 |
| 540 C | 8 / 340 | 4427 |
| 540 C | 12 / 540 | 4977 |
| 165 | 4 / 80 | 1447 |
| 165 | 4 / 120 | 1547 |
| 165 | 8 / 160 | 1777 |
| ALL ACCESSORIES | | CALL |

## DUO

| | | |
|---|---|---|
| 250 | | CALL |
| 270 C | | CALL |
| 280 | 4 / 240M | 2397 |
| 280 | 12 /240M | 2897 |
| 280 C | 4 / 320 | 3177 |

## PRINTERS

| | |
|---|---|
| STYLEWRITER II | 287 |
| COLOR PRO | 587 |
| HP DW 560 | 577 |
| HP DW 310 | 317 |
| HP 1200 C/PS | 2047 |
| 320/360 | 887 / 1447 |
| 630 / 810 | 1947 / 4377 |

## SCANNERS

| | |
|---|---|
| UC 630 | 697 |
| UC 840 | 947 |
| UC 1260 | 1197 |
| HP II CX | 967 |
| SCANMAKER II | 717 |
| SCANMAKER IIXE | 997 |
| Cool Scan Ext. | 1797 |
| Nikon Film Scanner | CALL |

## MONITORS

| | |
|---|---|
| 14 / 14 PLUS | 397 / 297 |
| 14" AV | 627 |
| MULTISCAN 17 | 1027 |
| MULTISCAN 20 | 1977 |

## SONY NEC

| | |
|---|---|
| 1730 / 17SE | 977 / 1177 |
| 2036 / 2038 | 1897/ 1997 |
| 4FGE / 3V | 647 / 577 |
| 5FGP / 6FGP | 1177 / 2047 |

## SUPERMAC

| | |
|---|---|
| 17T | 997 |
| 20TXL | 1947 |
| 21" Press View | 3177 |

## AUDIO / VIDEO PRODUCTION

| | | | |
|---|---|---|---|
| DIGITAL FILM 2050 | 3377 | PINNACLE REC CD | 3677 |
| VIDEO VISION STUDIO | 3377 | KODAK | CALL |
| SUPERMAC HDTV | 7977 | TRUEVISION BDS | CALL |

**WE SPECIALIZE IN CUSTOM MADE CONFIGURATIONS**

CIRCLE 495 ON READER SERVICE CARD

# DATA MICRO COMPUTER

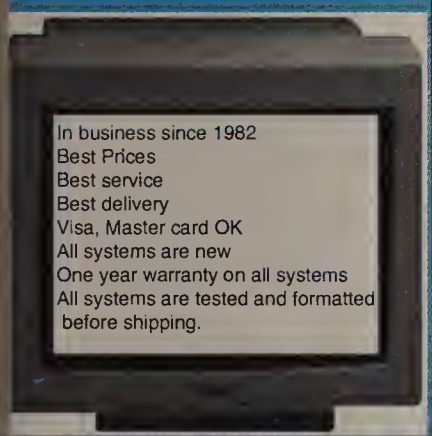
3847 Grand View Blvd. Los Angeles, CA 90066

TEL: (310) 398-3300

FAX: (310) 391-2488

**Corporate, Dealer, and International Sales Welcome!**

Next & same day shipping avaiable! No sales tax for out side of California orders. Prices subject to change with out notice!




**Leasing available!**
FOR BUSINESSES ONLY!

## POWER PC

| | |
|---|---|
| **6100** | |
| 8/160 | 1652. |
| 8/160CD | 1952. |
| 8/250CD | 2126. |
| 16/250 Win. | 2326. |
| AV 8/250CD | 2390. |
| AV 16/250CD | 2690. |
| **7100** | |
| 8/250 | 2575. |
| 8/250CD | 2875. |
| 16/250 Win | 2995. |
| 8/500CD | 3495. |
| 16/250CD | 3150. |
| **8100** | |
| 8/250 | 3785. |
| 8/250CD | 4075. |
| 16/500 | 4352. |
| 16/500 Win | 4677. |
| 16/1Gig CD | 4952 |

## QUADRA'S

| | |
|---|---|
| 605 4/80 | 795. |
| 605 8/160 | 995. |
| 610 8/160 | 1295. |
| 610 8/230CD | 1877. |
| 650 8/230 | 1995. |
| 650 8/230CD | 2295. |
| 660AV 8/230 | Call |
| 660AV 8/500CD | Call |
| 800 8/230 | 2295. |
| 800 8/500CD | 2852. |
| 840AV 8/230 | 2652. |
| 840AV 8/230CD | 2895. |
| 840AV 8/1.2 | 3326. |
| 840AV 64/1.2 | 5595. |
| 950 8/230 | 3099. |
| 950 16/1GB | 3945. |
| 950 136/1Gig/CD | 8130. |
| 950 136/2Gig/CD | 8795. |

**for ite:ns not listed please call!**

## PowerBook's

| | |
|---|---|
| 145B 4/40 | Call |
| 165 4/80 | 1549. |
| 165c 4/80 | 1595. |
| 180 4/80 | 1752. |
| 180c 4/80 | 2360. |
| 520 4/160 | 2097. |
| 520c 4/160 | 2647. |
| 520c 12/500 | 3527. |
| 540 4/240 | 2897. |
| 540 12/240/M | 3497. |
| 540c 4/320 | 4297. |
| 540c 12/320/M | 4897. |
| 540c 12/500/M | 5447. |

## EPSON

| | |
|---|---|
| ES-800C Pro | 1225. |
| Actionscanning | 799. |

## SHARP

| | |
|---|---|
| JX-325 | Call |
| JX-610 | 9899. |
| Printers | Call |

## PRINTERS

| | |
|---|---|
| Apple ColorStyl. | 625. |
| StyleWriter II | 295. |
| Portable Styl. | 395. |
| Pro 630 | 1950. |
| Pro 810 | 4352. |
| Select 300 | 495. |
| Select 310 | 677. |
| Select 360 | 1469. |
| DeskWriter 560c | 585. |
| D.Writer 1200c | 1895. |
| HP Laser 4M | 1875. |
| HP Laser 4ML | 989. |
| HP Laser 4MP | 1377. |

## Daystar

| | |
|---|---|
| Turbo 040/40 | 1219. |
| Turbo 040i/33 | 739. |
| Value 040/40 | 1225. |
| Fastcache Qud. | 365. |
| 50Mhz powercache | 549. |
| Diskrunner | 569. |

## UMAX

| | |
|---|---|
| UC630LE | 675. |
| UC840 | 895. |
| UC1260 | 1195. |
| UC1200SE | 2495. |
| Transparanci | Call |

## MICROTEK

| | |
|---|---|
| ScanMaker II | 599. |
| ScanMaker IIxe | 975. |
| ScanMaker IIsp | 775. |
| ScanMaker IIG | 475. |

## SUPERMAC

17" Color MultiScan **$ 744.**

| | |
|---|---|
| 17T Trinitron | 995. |
| 20TXL | 2425. |
| Pressview 21" | 3095. |
| Thunder II 1360 | 2185. |
| Thunder IIGX | 2595. |
| ProofPositive | 6595. |

## E-MACHINE

| | |
|---|---|
| Futura IISX | 437. |
| Futura MX | 477. |
| Futura IIILX | 747. |
| Ultra LX | 1037. |
| T-16II-MR | 899. |

## NIKON

| | |
|---|---|
| Coolscan 35mm | 1829. |
| Coolscan Internal | 1588. |

## Pinnacle Micro

| | |
|---|---|
| Pmo 650mb Opt. | 2577. |
| Sierra 1.3gb | 2647. |
| Recordble rcd202 | 3277. |

## NewGen

| | |
|---|---|
| Turbo PS-440B | 2795. |
| Turbo PS-660B | 3145. |
| Turbo PS-660BE | 3495. |
| Turbo PS1200B | 3895. |
| Imager 6L 600dpi | 3350. |
| Imager 6L/Ether. | 3695. |
| Imager 12 1200dpi | Call |

## RADIUS

| | |
|---|---|
| Intelecolor 20 | 2495. |
| Intelecolor 20v | 1775. |
| Precision pro 24x | 1395. |
| Precision pro 24xp | 475. |
| Precision pro 24xk | 595. |
| Precision pro 8xj | 495. |
| Stagetwo rocket | 1495. |
| Videovision studio | 3195. |
| Videovision nubus | 1495. |

## FARGO

| | |
|---|---|
| Color printer | 959. |
| Photo Realis.upg. | 249. |

## PLI

| | |
|---|---|
| Infinity 40 | 329. |
| Infinity 88 | 499. |
| Infinity 105 | 539. |
| Quick SCSI | 319. |
| MiniArray 1gb | 2095. |
| 128 IBM optical | 1049. |
| 1.3GB Tahiti II | 3167. |

## Global Village

**PowerPort**

| | |
|---|---|
| Bronze 9600 | 97. |
| Gold 14.4 | 277. |
| Mercury 19.2 | 327. |

## SONY

| | |
|---|---|
| 1430 14" | 539. |
| 1730 17" | 989. |
| 17SE1 17" | 1119. |
| 1936 20" | 1599. |
| 2036 20" | 2019. |
| 2038 21" | 2337. |

## APPLE

| | |
|---|---|
| 14" Basic color | 187. |
| 14" Color Plus | 295. |
| 14" RGB Color | 399. |
| 14" AV Color | 688. |
| 16" RGB Color | 949. |
| 17" RGB Color | 995. |

## RasterOps

| | |
|---|---|
| PaintBoard Turbo | 109 |
| 21" Dual mode | 239 |
| Moviepak | 114 |
| DuoMate | 39 |
| 20/20 Color | 149 |
| 20T Multiscan | 248 |
| 15" Portrait | 39 |

## NEC

| | |
|---|---|
| 3FGE | 59 |
| 3V | 63 |
| 4FGE | 72 |
| 5FGE | 109 |
| 5FGP | 122 |
| 6FGP | 239 |
| 3PG | 224 |

## DAT/OPTICAL

| | |
|---|---|
| 2.1 Gig DAT | 89 |
| 8 Gig/DDSII | 119 |
| 128MO Sony | 99 |
| 256MO Sony | 119 |

## AGFA

| | |
|---|---|
| StudioScan | 99 |

## TEXAS INS.

| | |
|---|---|
| Microwriter ps23 | 69 |
| Microlaser oro 600 | 138 |

## GCC

| | |
|---|---|
| Select press 600 | 377 |
| Select press 1200 | 597 |
| Elite 600 | Ca |
| PLPII | 52 |
| Ecliose 4 | 87 |

## FWB

| | |
|---|---|
| Hammer 1gb int. | 128 |
| Hammer 2gb int. | 218 |
| Hammer 2gb Ext. | 237 |
| Hammer 4gb array | Ca |
| PE 130MB Optical | 97 |
| Hammer scsi acce. | 62 |

## Hi-End Specials!

Power PC 8100/80
136MB, 2.1Gig HD, CD
SuperMac 21" Pressview
Thunder IIGX 1360
Extended keyboard
Sharp JX-610 Scanner
**$ 25,285.00**

Power PC 8100/80
72MB, 1.2Gig HD, CD
SuperMac 20"Triniron
Thunder IIGX 1360
Extended keyboard
with mouse pad
**$ 12,295.00**

Power PC 7100/66
40MB, 1.2HD CD
SuperMac 17T
Extended keyboard
& Mouse pad
**$ 5,695.00**

Quadra 840AV
72MB, 1.2HD CD
Sony 20" Trinitron
Radius Pro24x
Extended keyboard
**$ 8395.**

| | |
|---|---|
| SuperMac 17T | 944. |
| SuperMac 20T 20" | 1695. |
| Sony 20" Trinitron | 1595. |

QMS 600dpi Dual tray
Hi-Resolution only
**$ 2295.00 Lmtd.qty.!**

**128MB Optical cartridges**
**$ 33. Min. 5 pcs.**

**Call for most recent prices!**

**FOR ORDERS ONLY!**
**800-345-1234**

CIRCLE 508 ON READER SERVICE CARD

# LOWEST PRICES BEST SERVICE

QUADRAS POWERBOOKS
PRINTERS MONITORS
POWER PCs

CALL FOR QUOTES
**310-358-9000**
FAX 310-358-9100

**Dealers & International Orders Welcome**

Same Day Shipping in USA
We Only Sell Brand New Systems
Full One-Year Warranty

"Best Computer Source"
–Computer Magazine

# COMPU AGE

THE SOURCE TO MACINTOSH WORLD
318 N. LA CIENEGA • LOS ANGELES, CA 90048

CIRCLE 542 ON READER SERVICE CARD

# MacCare INCORPORATED

*Your Desktop Publishing Multi-Media, Video-CD Production Source*

Fax: (714) 375-6397
Voice: (714) 375-6390

## MULTIMEDIA BLOWOUT!

| | |
|---|---|
| Radius Video Vision Studio | $2975 |
| Radius Video Vision Studio Upgrade | $1375 |
| RasterOps Movie Pack II Studio | $2995 |
| RasterOps Movie Pack | $899 |
| Phillips CD-Rom Recorder (While Supply Lasts) | $5899 |
| Sony V-Deck | Call |

*Call For Any Multi Media Product*

**MONITORS**

| | |
|---|---|
| 15" AV Proton High Res Stereosound | $495 |
| 17" Flat Square Hitachi Tube .28mm | $595 |
| 14" Apple Color Monitor | $225 |

*Call For Pricing On Any Monitors*

**MACINTOSH**

| | | | |
|---|---|---|---|
| Q 840AV-8/230 | $3275 | PPC 6100 8/250 | $1750 |
| Q 660AV-8-230 | $2150 | PPC 7100 8/250 | $2795 |
| Q 650-8/80 | $1875 | PPC 8100 8/250 | $3795 |
| Q 950 | $3175 | PPC 8100 AV | $4995 |
| Q 800-8/230 | $2495 | Blackbirds | CALL |

*Call For Pricing On Any Macintosh Computer*

**PRINT PRODUCTION**

| | |
|---|---|
| QMS Color Script | $2275 |
| Kodak Color Ease | $6275 |
| GCC ColorTune | $6225 |

**SPECIAL DEALS**

| | |
|---|---|
| SuperMac Thunder 24 | $1295 |
| E-Machine T16 II | $995 |
| 1GB External HD | $795 |

**Call For Any Product Advertised In MacWorld**

Prices Are Subject To Change Without Prior Notice

**1-800-429-7779**

CIRCLE 405 ON READER SERVICE CARD

# IMAGE MACHINES

1-800-909-7879
1-413-436-7879

Power Macintosh Computers · PowerBooks
PowerPC Upgrades · Coprocessors · Accelerators
Apple · DAYSTAR · YARC · Radius · SuperMac

**MONITORS**

Apple · HITACHI · NANAO · NEC · NOKIA · SONY
Radius · SuperMac · Mitsubishi · ViewSonic

Ask for Radius & SuperMac Specials & Rebates!

PRINTERS · SCANNERS · OPTICAL DRIVES
Apple · GCC · KODAK · Mitsubishi · QMS · Seiko
Nikon · SuperMac · MICROTEK · UMAX · Pinnacle

D1 VIDEO EXPLORER & TRUEVISION Animation
CD-ROM/CD-I/Video CD MPEG Authoring
NONLINEAR VIDEO EDITING & ANIMATION
Systems and Software

Radius VideoVision Studio Image Telecast

Electric Image · CoSA · VIDI Presenter Professional
The Animation Stand · Diaquest · form·Z · STRATA

SONY/Panasonic Cameras/VTRs/Laser VideoDisc

NO CALIFORNIA SALES TAX! NO PAYMENTS FOR 90 DAYS!

COMPAQ · HEWLETT PACKARD · radius · Microsoft · FUJITSU · IBM · SUPERMAC · RELISYS · XANTE

# C.R.I. INC.

*Best Selection...Best Service !*

**1 800 275-9924**

IN NY 516 737-0800 FAX 516 737-0923

PRICES REPRESENT CASH DISCOUNT

POWERPC & NEW POWERBOOKS ARE HERE!

**QUADRAS**

605 4MB/80HD.....$799
605 8MB/160HD...$1050
610 8MB/160HD...$1350
610 8MB/230HD...$1675
610 8MB/230/CD..$1950
650 8MB/230HD....CALL
650 8MB/500HD...$2550
800 8MB/230HD....CALL
950 8/0.....$3100
660av8MB/230HD..CALL
840av8MB/230HD.$3250
840av8MB/500CD..CALL

**SUPERMAC / SONY**

17T.....$1039
20 PLUS.....$1699
20TXL.....CALL
THUNDER LIGHT..CALL
THUNDER 24.....CALL
SPECTRUMV/pdq+CALL
CPD1320.....$389
CPD1730.....$1039
1730 SE1.....$1199

**POWERBOOK**

165 4/40.....$1399
165 4/80.....$1499
165 4/160.....CALL
180 4/80.....$2150
180 4/120.....$2325
160C 4/80.....CALL
180C 4/160.....CALL
250 4/200.....$1795
270C 12/240 M.....$3325

**PRINTERS**

HP 4ML.....$999
HP 4MP.....$1399
HP 4M .....$1995
HP 4M+.....CALL
4SIMX..... .....CALL
DESKWRITER.....$299
C/560C.....$399/CALL
1200 C/PS.....CALL
PJXL300PS.....CALL
STYLEWRITER II...$299
PRO 630.....$1995
LZR 1580.....CALL
QMS 860..... .....CALL

**RADIUS/ NEC**

INTELCOLOR 20 CALL
PC 24X.....CALL
PC24XP.....$1399
3V.....$499
3FGe.....$609
5FGe.....CALL

**POWERBOOK HD**

PB 40/80/HD.....$79/149
PB 120/160HD.$215/310
PB 250/340HD.$390/545
POCKET EXT.CS.....$85

APPLE SUPERDRIVE. $149

**SCANNERS**

UMAX 630LE.....$729
UMAX 840.....$975
UMAX 1260.....$1229
SCANMAKER II SP.$829
SCANMAKER II G...$499
MICROTEK 35T.....CALL
HP SCANJET IICX..$995
HP SCANJET IIP....$509
EPSON ES.....CALL
RELISYS.....CALL

CRI EXT. KEYBOARD $99

PAGEMAKER 5.0 $539.00
MACROMEDIA DIRCTOR 4.0 $759.00

*Graphic Consulting, Training, Service and Support !*

NEW & USED BOUGHT & SOLD
*Ask about our EXTENDED WARRANTY*

CRI COMPUTERS SYSTEMS

Product Names are Trademarks or Registered Trademarks of their respected holders.Prices subject to change due to market conditions

CIRCLE 474 ON READER SERVICE CARD

# TRADE IN YOUR OLD MAC FOR A NEW MAC!

LOOK!

AT OUR PRICES

**Quadra/Power Mac**

8100 AV ..... CALL
8100 16-500..4620
8100 32-1GB.. CALL
7100 8-0 ..... 2490
7100AV 8-5003565
6100 8-500 CD2390
6100 8-230 .. 2195
Q840 16-1GB CALL
Q840 0-0 ..... 2490
Q650 ..... 1895
950 ..... CALL
900 ..... STOCK

**BLACKBIRD/PB/DUO**

540C 4-160 ... CALL
540C 36-320 5690
52016-160 .... CALL
520 8-340 .... 2625
180C 4-80 ...STOCK
165C 4-250 .. 1980
180 4-80 ..... 1840
DUO 280C ..... CALL
280 12-240 .. 3190
250 4-200 .... 1750
250 +MODM CALL
230 4-80 ..... CALL

**DEMO UNITS**

Q700 ..... 1240
Q800 .....STOCK
Q900 ..... 1489
II SI ..... 335
IIG/IIF .....STOCK
PB 170 ..... 1090
PB 180 ..... CALL

**MORE DEMO UNITS IN STOCK**

PB 140 ..... 815
14" MONITOR...CALL
CTR 650/660.CALL

**TRADE & UPGRADE**

700/900-840 180
Q800 to Q840 1149
FX to Q660 ... 1345
LC III upgrade . CALL
PB 140 to 180 CALL
PB 170 to180 . 990
PB 160 to165 . 790

**LOGIC BOARDS**

Q-840 AV ..... CALL
660 AV ..... 899
IIF/IIG ..... CALL

**SCANNERS**

NIKON ..... CALL
AGFA.....2980
UMAX.1260.....1790.
MICROTEK.....STOCK.

**PRINTER**

NEWGEN ..... CALL
HP4ML ..... 980
HP 4 ..... CALL

**MONITOR**

ALL BRANDS AVAL.
NEC 5FGE ..... CALL

PARTS !!! POWER SUPPLY FLOPPY DRIVE HARD DRIVE IN STOCK

*Special Upgrade* LC, LCII, LCIII to Preforma 460 33 mhz $385 Centris 610 $989

**WE SELL: *NEW MACS, PRE-OWNED MACS AND PARTS!***

PLUS MONITORS, SCANNERS, PRINTERS, MODEMS & MORE

CALL NOW DON'T DELAY

INTERNATIONAL COMPUTER & NETWORKING
FON 310-441-9181 ■ FAX 310-479-0124
10835 SANTA MONICA BLVD., SUITE 102, LOS ANGELES, CA 90025

CIRCLE 439 ON READER SERVICE CARD

# MEDIA TECHNOLOGY

| | | | | |
|---|---|---|---|---|
| 1x8 | 70ns | 37.50 | IBM 128MO | 799 |
| 4x8 | 70ns | 136.50 | FUJITSU 128MO | 880 |
| 16x8 | 70ns | CALL | FUJITSU 230MO | CALL |
| 1x32 | 70ns | 135.00 | PLI 1.3GIG MO | 4300 |
| 2x32 | 70ns | CALL | 128MEG CART | 28 |
| 4x32 | 70ns | CALL | 128MEG FMT CART | 32 |
| 8x32 | 70ns | CALL | 650MEG CART | 78 |
| 64 MEGPPC IN STOCK | | | 1.2GIG CART | 98 |
| 256K VRAM | | 14.00 | 1.3GIG CART | 98 |

TOSOH REWRITABLE OPTICAL DISK 1-800-937-2366 Dynex MO 128

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

CIRCLE 554 ON READER SERVICE CARD

## PowerMacs

| | |
|---|---|
| 100 16/250/CD | 2345 |
| 100 av 8/250/CD | 2329 |
| 100 8/160 | 1629 |
| 00 16/250/Win | 2275 |
| 00 40/1gb | 4295 |
| 00av 72/2gb/CD | 6695 |
| 00 16/250/Win | 2999 |
| 00 72/1GB | 6495 |
| 00 8/250/CD | 3999 |
| 00 16/500/Win | 4695 |
| 00 av16/500/CD | 5075 |

## Apple Printers

| | |
|---|---|
| ylewriter II | 279 |
| lyewriter Pro C | 595 |
| rt. Stylewriter | 399 |
| ser Select 320 | 875 |
| ser Select 360 | 1435 |
| ser Pro 630 | 1895 |
| ser Select 810 | 4445 |

## New Arrivals

| | |
|---|---|
| **605 4/160/Sftwr** | **995** |
| **605 8/250/Sftwr** | **1295** |
| **PB 520 4/160** | **2095** |
| **PB 520C 4/160** | **2645** |
| **PB 540 12/240/M** | **3475** |
| **PB 540C 4/230** | **4275** |
| **Duo 230 fd/dock** | **1475** |
| **Duo 280 12/240/M** | **2895** |
| **Duo 280c 4/320** | **3375** |

## Quadras

| | |
|---|---|
| 605 8/160 | 995 |
| 610 16/250/CD | 2199 |
| 610 8/160/DOS | 1475 |
| 650 40/1gb/CD | 3945 |
| 660AV 8/230/CD | 1649 |
| 840 24/230/CD | 3530 |
| 840 128/2GB/CD | 8595 |
| 950 136/1.2GB | 7795 |
| 950 256/2GB/CD | 12995 |

## Apple Monitors

| | |
|---|---|
| Color Plus 14" | 299 |
| 14" Trinitron | 399 |
| 14" AV Monitor | 629 |
| Apple 16" RGB | 875 |
| Multiplescan 17" | 979 |
| Multiplescan 20" | 1925 |

## Hewlett Packard

| | |
|---|---|
| Deskwriter | 199 |
| Deskwriter C | 375 |
| Deskwriter 310 SF | 359 |
| Deskwriter 520 | 275 |
| Deskwriter 560C | 559 |
| Laser 4ML | 945 |
| Laser 4MP | 1299 |
| Laserjet 4MPlus | 1875 |
| Deskjet 1200C P/S | 2050 |
| Laser 4Si Mx | 4049 |
| Scanjet IIP | 479 |
| Scanjet IICx | 925 |

## Supermac

| | |
|---|---|
| Platinum 21" Mono | 995 |
| Supermatch 20" Plus | 1579 |
| Supermatch 17T | 1025 |
| Supermatch 20Txl | 1995 |
| Supermatch 21" col | 2145 |
| Thunder II Gx 1360 | 2545 |
| Thunder II Gx 1600 | 3095 |
| Digitalfilm | 2695 |

## Radius

| | |
|---|---|
| Prec.Color Pivot 15" | 799 |
| Mono Pivot 15" | 585 |
| Full pg 15" Mono | 499 |
| TPD 20 GS | 799 |
| Prec.Color 17" Tri | 1075 |
| Prec.Color 20V | 1599 |
| Intellicolor 20" | 1799 |
| Prec.Color 21" | 1995 |
| Videovision Nubus | 1495 |
| Videovision Studio full | 3275 |

## RasterOps

| | |
|---|---|
| Clearvuecolor 20T | 1895 |
| Sweet 16 AV Monitor | 945 |
| Clearvuecolor 17" | 899 |
| 20T Multiscan | 1899 |
| Horizon 24 bit | 2035 |
| Moviepak 2 pro | 3175 |
| Mediatime 24 bit | 799 |

## Sony

| | |
|---|---|
| GDM-17SE1 | 1095 |
| GDM-2036S | 1825 |
| GDM-2038 | 1939 |
| CPD-1730 | 995 |
| CPD 1430 | 495 |
| 128mb MO External | 1245 |
| 1,3GB ext. MO Dr. | 2175 |

## SPECIALS

| | |
|---|---|
| **Calcomp CCL 600** | **$2999** |
| **Powerbk 165 4/160** | **$1825** |

## N E C

| | |
|---|---|
| 3V / 3FGe | 499/599 |
| 5FGe /5FGp | 1075/1099 |
| 6FGp 21" | 1995 |
| SW 640 | 745 |
| FG 24x 24bit card | 899 |

## NewGen

| | |
|---|---|
| Imager Plus 6L | 3595 |
| Imager Plus 6 | 3995 |
| Imager Plus 12 | 5495 |
| PS 1200B | 4145 |

## P L I

| | |
|---|---|
| Infinity 88rw/44 | 469 |
| Infinity 200MB rw | 649 |
| 128MB MO Ext. | 995 |

## Wacom

| | |
|---|---|
| Art Z 6*8 | 299 |
| 12*12 RM | 499 |
| 12*18 Elect w/sp 300 | 995 |

## Microtek

| | |
|---|---|
| Scanmaker II | 599 |
| Scanmaker II xe | 879 |
| Scanmaker III | 2345 |
| Scanmaker 35T | 1299 |

## Umax

| | |
|---|---|
| UC 630 LE | 699 |
| UC 840 | 899 |
| UC 1260 | 1199 |
| UC 1200SE | 2545 |

**Custom configurations available**
**International Orders Welcome**
***Call us for all HP Accessories***
Ask for Corp. Leasing. Amex,Visa, M/C,Discover

# *Mac Storm*

**Call (310)829-9780**
**Free inquiry by fax at**
**1-800-Fax-9553**
**Local & Int'l Fax (310)315-1009**
C.O.D Prices shown and may change w/o notice

CIRCLE 555 ON READER SERVICE CARD

---

# MAC CITY
COMPUTERS

ALL SYSTEMS ARE NEW WITH ONE YEAR WARRANTY
NO TAX OUTSIDE CALIFORNIA
WE CARRY FULL LINE MACINTOSH SYSTEMS SINCE 1987
**INTERNATIONAL ORDERS VISA-MC-AMEX OK**

**Tel: (818) 505-8991**
**Tel: (818)385-0080**
**Fax: (818) 505-8992 Fax:(818)385-0081**
**26 Ventura Blvd STUDIO CITY, CA 91604**

## QUADRA

| | |
|---|---|
| Q650 16/500 CD | CALL |
| Q650 8/230/CD | 1949/2199 |
| Q610 8-230-CD | CALL |
| Q610 8-80/160 | 1199/1299 |
| Q605 4/80 | 899 |
| Q605 8/160 | 1129 |
| Q840 8-230 / CD | 2799/2999 |
| Q840 16-500/ CD | CALL |
| Q840 24-1.2G CD | 4149 |
| Q950 8-0/500/1.2G1G | CALL |
| 660 8-230 / 500 | 1529/1799 |
| 16MB 60nsc non compst | 579 |

**PowerPC Upgrades SAVE With Any Purchase**
ASK FOR LATEST PRICES

## Powerbook / BLACKBIRD

| | |
|---|---|
| 180c 14/250-14/340 | Call |
| 180 4/80 | 1899 |
| 180 14/250 | Call |
| 165C 4/80-4/120 | Call |
| 165 4/80-4/160 | 1499 /1699 |
| Duo 270c / 250 | Call |
| 4MB/10MB | 189/369 |
| 14.4 FAX MODEM int | 219 |
| 540C 4/320 | 4299 |
| 540C 20/220 | CALL |
| 540 14/240 | 2899 |
| 520C 4/160 | 2699 |
| 520C 8/240 | CALL |
| Duo 280c 4/320 | CALL |
| Duo 280 12/240 | CALL |
| CARRY CASE | $39 |

## PowerPC

ALL CONFIGERS AND UPGRADES

| | |
|---|---|
| 8100AV 32-1gig CD | 5899 |
| 8100AV 136/0 | CALL |
| 8100 72/1G CD | 6899 |
| 8100 24-1G1G CD | 5129 |
| 8100 8-250 | 3799 |
| 8100 8-0 | 3599 |
| 8100 16/500 | 4249 |
| 7100AV 8-500 CD | 3599 |
| 7100 8-250/8-1G1G | CALL |
| 7100 Softwindows | CALL |
| 7100 8.0 | 2349 |
| 6100AV 8-250 CD | 2349 |
| 6100 8-160 | 1599 |

## PLI

| | | |
|---|---|---|
| 200 | EXT | CALL |
| 44/88C | EXT | 489 |
| 105MB | EXT | 419 |
| 128 OPTICAL | | CALL |
| MINI ARRAY 1G | | 1995 |

## Monitor

| | |
|---|---|
| APPL 14" PLUS/Color | 295/199 |
| Apple 14T/17T | 379/989 |
| Apple 14"AV/20"T | 595/1889 |
| RADIUS 20" COLOR | 1699 |
| Radius COLOR Pivot | 899 |
| Radius 15" pivot | 559 |
| Rad VideoVision Studio | 3269 |
| Rad Prec 24XP | 499 |
| Supermac 21" Two Page | CALL |
| Supermac 17/20T | 899/call |
| Supermac Thunder II | 2099 |
| Supermac Thunder 24 | 1669 |
| Sony 17SE1 | 1129 |
| Sony 1320/1730 | 339/949 |
| Sony 2036/2038 | CALL |
| Nec 3FGE/4FGE | 595/715 |
| Nec 5FGP/6FGP | 1179/2189 |

## Printer & Scanners

| | |
|---|---|
| Pro 810/630 | Call/1949 |
| Select 310 / 360 | 639/Call |
| Select 320 | 949 |
| Stylwriter II | 289 |
| Stylwriter port | 398 |
| Apple Color Printer | Call |
| HP 4ML/4MP | 989/1329 |
| HP 4M/4MPlus | 1869/1949 |
| HP DJ 1200C PS | 2079 |
| HP Deskwriter 560c | 569 |
| HP Deskwriter 520 | 289 |
| HP Scanjet IIcx | 929 |
| UMAX 840 | 1049 |
| UMAX 1260 | 1509 |
| UMAX 1200SE | 2839 |
| Microtek Scan IIXE | 969 |
| Microtek II | 635 |

## CD'S & Hard Drive's

| | |
|---|---|
| Seagate Baracuda 2.4g ex | 1799 |
| Seagate 3.4g 11ms ex | 2239 |
| Quantom 1g 9.5msc int | 749 |
| Quantom 250MB | 249 |
| Quantom 540MB | 449 |
| Quantom 1.08G | 749 |

**ASK FOR LATEST PRICES**
**WE DON'T TRADE OR SELL USED COMPUTERS**
**WE SELL ONLY NEW SYSTEMS**

CIRCLE 442 ON READER SERVICE CARD

---

# MacAttack

$$$

**(800) 299-MACS** **(800) 299-6227**
**409.690.5353 (Fax)** **409.690.5345 (Intl. Sales)**

## We Attack High Prices!!

Prices subject to change — please call for latest pricing. We carry hundreds of items — call for availability. Your satisfaction is our goal.
Prices are C.O.D. and subject to change. International Orders and Fax Orders Welcome!

### New Macs

| | |
|---|---|
| Color Classic | $849 |
| Centris 660av 8/500/CD | $1950 |
| Quadra 605 4/80 | $890 |
| Quadra 605 8/160 | $1177 |
| Quadra 610 8/160 | $1308 |
| Quadra 610 8/160 (DOS Compatible) | $1432 |
| Quadra 610 8/230 | $1648 |
| Quadra 610 8/230/CD | $1964 |
| Quadra 650 8/230 | $1933 |
| Quadra 650 8/230/CD | $2248 |
| Quadra 660av 8/230/CD | $1615 |
| Quadra 840av 8/230 | $2756 |
| Quadra 840av 8/230/CD | $3007 |
| Quadra 950 8/0 | $2713 |

One Year Warranty On New Macs !!
We sell only Apple original serial numbers.

### PowerMacs

| | |
|---|---|
| 6100/60 8/160 | $1651 |
| 6100/60 8/250 CD | $2078 |
| 6100/60 AV 8/250 CD | $2358 |
| 7100/66 8/250 | $2631 |
| 7100/66 8/250 CD | $2885 |
| 7100/66 AV 8/500 CD | $3620 |
| 8100/80 8/250 | $3665 |
| 8100/80 8/250 CD | $3898 |
| 8100/80 AV 16/500 CD | $4882 |
| 8100/80 16/1000 CD | $5313 |

### Scanners

| | |
|---|---|
| HP Scanjet IIcx/IIP | $980/730 |
| Interface For Scanjet | $265 |
| One Scanner | $705 |
| Color One Scanner | $938 |

### New Blackbirds

| | |
|---|---|
| Duo 280 4/240 | $2395 |
| Duo 280 12/240 Modem | $2867 |
| Duo 280c 4/320 | $3243 |
| Duo 280c 12/320 Modem | $3708 |
| 520 4/160 | $2060 |
| 520c 4/160 | $2632 |
| 540 4/240 | $2867 |
| 540 12/240 Modem | $3494 |
| 540c 4/320 | $4175 |
| 540c 12/320 Modem | $4779 |
| Duo Dock/Duo Dock II | $477/836 |

### Powerbooks

| | |
|---|---|
| 145B 4/80 | $1305 |
| 145B 4/120 | $1522 |
| 165 4/160 | $1800 |
| 165 4/160 Modem | $2146 |
| Duo 230 4/80 (Minidock & Floppy Drive) | $1434 |
| Duo 250 4/200 | $1814 |
| Duo 250 12/200 Modem | $2296 |
| Duo 270c 4/240 | $2583 |
| Duo 270c 12/240 Modem | $3055 |

### Software

| | |
|---|---|
| Photoshop 2.51 | $540 |
| PageMaker 5.0 | $540 |
| After Dark | $29 |
| Filemaker Pro 2.1 | $260 |
| Canvas 3.5 | $259 |
| Quicken 4.0 | $39 |
| Excel 4.0 | $309 |
| Word 5.0 | $305 |
| Office 3.0 (CD-ROM or Disk) | $460 |

### Monitors

| | |
|---|---|
| Apple Color Plus 14" | $288 |
| Mac 14" Trinitron | $407 |
| AudioVision 14" | $613 |
| Multiscan Trinitron | $982 |
| Sony 1430 14" | $580 |
| Sony Multiscan 17 SE | $1225 |
| Sony Multiscan 20" | $CALL |
| Apple Multiscan 20 Display | $1913 |
| RasterOps Sweet 16 | $965 |
| RasterOps 24XLI | $2315 |
| RasterOps 20t | $2066 |
| SuperMatch 17T | $995 |
| SuperMatch 20 Txl | $2475 |
| NEC Monitors | $CALL |

### Modems

| | |
|---|---|
| GV PowerPort Bronze | $97 |
| GV PowerPort Silver | $263 |
| GV PowerPort Gold | $281 |
| GV PowerPort Mercury | $329 |
| Geoport Adapter | $113 |
| SupraFax LC | $157 |
| SupraFax | $198 |

### Printers

| | |
|---|---|
| StyleWriter II | $290 |
| Apple Color SytleWriter Pro | $571 |
| LW Select 300, 310, 320, 360 | $CALL |
| LW Pro 630 | $1912 |
| LW Pro 810 | $4374 |
| HP Laserjet 4SI | $3190 |
| HP Laserjet 4SI MX | $4670 |

### CDs

| | |
|---|---|
| Apple CD 300 Ext. | $290 |
| Apple CD 300i Plus | $341 |
| Apple CD Multimedia Kit | $550 |

*(Includes Apple Design Power Speakers, CD 300 External, & 4 CDs)*

### Keyboards

| | |
|---|---|
| Apple Keyboard II | $75 |
| Apple Extended Keyboard II | $160 |
| Apple Adjustable Keyboard | $130 |

We have Intl Keyboards!

### Other Stuff

| | |
|---|---|
| Turbo Mouse | $110 |
| Apple Power Speakers | $140 |
| Apple Quick Take 100 | $667 |
| Newton & Accessories | $CALL |
| PLI (SyQuest) | $CALL |

We ship Airborne Express.
International shipments handled by DHL.

**FREE Mousepad With Every Order!!**

CIRCLE 438 ON READER SERVICE CARD

LATEST

# Mac S·A·L·E INTERNATIONAL

SPECIALS

## INCREDIBLE BLOW-OUT!!

**NEW Microsoft Office - $149.00**
(Includes Microsoft Word, Excel, Powerpoint & Mail)
ONLY $99.00 with Purchase of CPU

**NEW NEC CD-ROM DRIVE - $99.00**
Includes Over $200 Software Free:
T/Maker Clickart 2000 (Over 2000 EPS Images)
& FWB CD-ROM Toolkit & The Merchant

**•BUY THE NEC CD-ROM DRIVE & MICROSOFT OFFICE ON CD-ROM**
**FOR ONLY - $199.00**

## SYSTEM SPECIAL

Includes:
- 8MB RAM/160MB Hard Drive
- Internal Apple 300i Plus CD Drive
- Macintosh Color Trinitron 14"
- Apple 1.4MB SuperDrive
- 1MB VRAM (32,768 Colors)
- 33-MHz 68LC040/32-Bit Data Bus
- Built-in Stereo Speakers & Mike

**Apple's First All-in-One 040**
**New Mac LC 575**
**$1,699.00**

## NEW

| | |
|---|---|
| Power Mac, PowerBook, Duo's | In Stock |
| New Laserwriter Select 310 | $749.00 |
| New Laserwriter II Engine | $599.00 |
| New Stylewriter | $199.00 |
| New Apple Mouse II | $59.00 |
| New Conner 543MB 3.5" Int HD | $399.00 |
| New Apple PC 5 1/4" Floppy Drive | $15.00 |
| New Ext. Hard Drive Enclosures | $69.00 |
| New LC Apple Ethernet Card | $39.00 |

•WE CARRY THE LATEST MODELS - CALL FOR PRICES•

New Microsoft Works (Integrated Software) Super Sale! → $49.00

## USED

| | | |
|---|---|---|
| Mac Plus | 1/0 | $199.00 |
| Mac SE (800K) | 1/0 | $225.00 |
| Mac SE/30 | 1/0 | $549.00 |
| Mac Classic | 2/40 | $459.00 |
| Mac II | 1/0 | $199.00 |
| Mac IIsi | 1/0 | $279.00 |
| Mac IIcx | 1/0 | $399.00 |
| Mac IIci | 1/0 | $649.00 |
| Mac IIfx | 4/0 | $899.00 |
| Personal LW NT | | $499.00 |
| Personal LW NTR | | $749.00 |
| ImageWriter II | | $199.00 |
| Apple Stand. II keyboard | | $65.00 |
| Apple Ext. II keyboard | | $120.00 |
| Apple 13" RGB Display | | $349.00 |
| Apple Two Page Display | | $599.00 |
| Apple 8 bit Video Card | | $85.00 |
| Mac IIsi NuBus Adapter Card | | $49.00 |

**EPSON Color Scanner** 300 dpi, 256 Color Single Pass Flatbed → $499.00 ←

## DEALS

EMAC SE OR SE/30 ETHERNET BD - $15.00
POWERBOOK CORDURA CARRYING CASES - $25.00

WE CARRY MAC REPAIR / SERVICE PARTS AND OFFER EXTENDED WARRANTIES!!

Software Special Bundle Includes:
All For Only → $25.00 ←
Write Now, Faxmania
American Heritage Dictionary,
Grammatik Mac, Correct Quotes,
and ClickArt Holidays

Prices listed may not be current market value...

**1-800-729-7031**

Call for latest updated pricing

Prices represent a Cash Discount - off Full Price.

Returns at discretion of Mgmt./15% Restocking fee.

**WE WANT TO BUY YOUR NEW/USED MAC EQUIPMENT**

CIRCLE 401 ON READER SERVICE CARD

Sales (818)787-3282

# COMPU.D INTERNATIONAL, INC.

FAX (818)787-5555

## Power Mac

| | |
|---|---|
| 6100 8-160/500 | 1639/1949 |
| 6100 8-250 CD/500 CD | 2079/2279 |
| 6100 16-1GB/W-CD | 2619/2869 |
| 6100 av 8-250/W-CD | 2149/2339 |
| 6100 av 8-500/1GB | 3019/3269 |
| 6100 16/250 W-SoftWindows | 2299 |
| 7100 8-250/500 | 2609/2799 |
| 7100 16-1GB/2GB | 3449/3749 |
| 7100 av 8-500/W-CD | 3379/3589 |
| 7100 av 8-1GB/2GB | 4249/4549 |
| 7100 16/250 W-SoftWindows | 3069 |
| 8100 8-250/W-CD | 3749/3949 |
| 8100 8-1GB/2GB | 4619/4919 |
| 8100 av 16-500/W-CD | 4799/4999 |
| 8100 av 16-1GB/2GB | 5449/5749 |
| 8100 16/500 W-SoftWindows | 4629 |

APPLE CD ROM 300i
*For Power PC & Quadra*
*Factory Installed ADD $249*

SUPERMAC™

| | |
|---|---|
| Thunder II GX 1152 | 2049 |
| Thunder II GX Upgrade | CALL |
| Thunder 24 V.3.0 | 1575 |
| Power DSP Upgrade | CALL |
| Spectrum 24 PDQ+/24 Ser. IV | 949/749 |
| Spectrum 24 Ser. V | CALL |
| Spectrum Power1152 | 1109 |
| 17-XL Multimode | 939 |
| 17T Trinitron | 969 |
| 20" Plus Color Dual Mode | 1539 |
| 20-TXL Multimode | 1929 |
| 21-TXL Multimode | 2049 |
| 20" Hi Res. Trinit. | 2399 |
| 21" Two-Page Clr. | 1699 |
| Display Calibrator Plus | CALL |
| 20" /21" Gray Scale | 799/949 |
| T-16IIMR/ Ultura LX | 749/1019 |

## Software Specials

| | |
|---|---|
| Adobe Photoshop V. 2.5.1 For PPC. | 599 |
| Adobe Illustrator V. 5.0 | 329 |
| Adobe Premier V. 3.0 | 419 |
| Aldus PageMaker V.5.0.a | 549 |
| Aldus Freehand V. 4.0.1 | 359 |
| Caere OmniPage Pro V. 2.1 | 499 |
| ClarisWorks For Power PC | 188 |
| Claris FileMaker Pro V. 2.1 | 255 |
| Microsoft Office V. 3.0 | 425 |
| Microsoft Excel/Word | 299/299 |
| Pixar Typestry V. 2.0 | 199 |
| Penthouse *Interactive CD* | 95 |
| Other Software | CALL |

## Quadra

| | |
|---|---|
| Work Group Servers M. 60/80/95 | CALL |
| 950 8-0/525 | 2699/3149 |
| 950 16-1GB/2GB | 3899/4298 |
| 840 av 8-230/500 | 2899/3099 |
| 840 av 16-500/1GB | 3399/3799 |
| 840 av 16-2GB/W-CD | 4099/4349 |
| 800 8-500 CD | 2999 |
| 660 av 8-250/500 | 1399/1599 |
| 660 av 16-500/1GB | 2269/2569 |
| 650 8-230/500 | 1949/2199 |
| 650 16-500/1GB | 2499/2849 |
| 650 16-2GB/W-CD | 3268/3568 |
| 610 8-160 W-DOS CARD | 1499 |
| 610 8-230/500 | 1599/1949 |
| 610 16-1GB/W-CD | 2569/2869 |
| 605 4-80/160 | 789/849 |
| 605 8-240/500 | 1049/1299 |
| IISi 3-40/160 | 495/599 |
| IIVX 4-80/230 | CALL |

## PowerBook

| | | |
|---|---|---|
| 520 | 4-160 | 2095 |
| 520C | 4-160 | 2675 |
| 540 | 4-240 | 2895 |
| 540 | 12-240 W-Modem | 3499 |
| 540C | 4-320 | 4309 |
| 540C | 12-320 W-Modem | 4939 |
| 145B | 4-80/120 | 1219/1319 |
| 165 | 4-80/160 | 1429/1529 |
| 180 | 4-120/200 | 1799/1999 |
| 180C | 4-160/320 | 2649/2890 |

Call For *USED* PowerBooks

## DUO

| | | |
|---|---|---|
| 280 | 4-240 *(New Model)* | 2435 |
| 280 | 12-240 W/Modem | 2869 |
| 280C | 4-320 *(New Model)* | 3369 |
| 280C | 12-320 W/Modem | 3829 |
| 270C | 12-240 W/Modem | 2899 |
| 230 | 4-80/120 | 1095/1195 |
| 230 | 4-80W-Mini Dock+FLPY | 1525 |
| 250 | 4-200 | 1495 |

## SPECIALS

**DUO 250 4-80/200 $1395/1499**
*68030, 33MHz, Active Matrix Display,*
*4.2 Lbs. Lightest PowerBook, Upgradable to 24MB RAM*

**Microsoft Office 3.0 MAC**
**$420**

**DUO Dock W/FPU $345**
*1.4MB Super Drive, Ext. Video out ,*
*2 NuBus Slots, 68040 Upgradable*

**SuperMac 17" Multi-Mode**
1024x768 Res., .28 **$549**

**SONY 1304S (New) $339**
1024x768 Res., .25 Trinitron

**SCANNERS**
*ScanMaker II/IIXE* 620/899
*UMAX 630LE/840* 620/825

**E-Machine E-20 $1095**
**Futura SX/MX $199/349**
**T16 IIMR $749**

**COMPAQ** Prolinea 486-66
340MB HD $1695
**IBM** ThinkPad 750C/750CS
340MB HD $Call In Stock.
**TOSHIBA 4500C-120MB HD**
i486, Active Matrix Clr.$2095

**Apple Color Printer $595**
11x17, 4Color CMYK With ColorSync, 45 Fonts

WE ALSO DISTRIBUTE
COMPAQ TOSHIBA IBM
TOSHIBA Authorized Dealer & Service Center
*CALL US WITH YOUR BEST OFFER*

## MONITORS & CD ROM Drives

| | |
|---|---|
| 20"/17" Trinitron Multi-Scan | 1899/989 |
| 16" /14" /12" RGB | 849/369/195 |
| AudioVision 14" | 589 |
| 14" Color Plus/14" Basic | 289/179 |
| CD 150i/150 | 99/149 |
| CD 300i/300/Internal CD Kit | 249/329/29 |
| QuickTake100 | 679 |

## PRINTERS

| | |
|---|---|
| Select 300/310 | 499/599 |
| Personal 320/Select 360 | 879/1429 |
| Pro 630/600 | 1929/1299 |
| Pro 810 | 4299 |
| LaserWriter IIF/IIF Board | 1099/295 |
| LaserWriter IIG/IIG Board | 1499/799 |

## Hard Drive

| | |
|---|---|
| 80/120/160 MB HD 2.5" | 109/179/210 |
| 210/250/340MB HD 2.5" | 249/319/419 |
| 525MB HD 2.5" For PowerBoook | 619 |
| 40/160/270MB HD 3.5" | 79/210/290 |
| 340/525MB/1GB | 279/399/665 |

## HEWLETT PACKARD

| | |
|---|---|
| LaserJet 4ML/MP | 965/1295 |
| LaserJet 4M/4M 220V. | 1835/1925 |
| LaserJet 4M Plus | 1899 |
| 4SI MX/4SI | 4250/2865 |
| DeskWriter /DeskWriter C | 235/375 |
| DeskWriter 550C/560C | 440/559 |
| DeskWriter 520/310 Portable | 290/315 |
| DeskJet 1200C PostScript | 1995 |
| PaintJet XL300 PostScript | 3190 |
| ScanJet IIC Demo | 595 |
| ScanJet IIP/ IICX New | 549/899 |

Liquidation Prices For HP Printers'Accessories!

## SONY

| | |
|---|---|
| 1320/17 SE1 | 339/1099 |
| 2036S/2038S | 1899/2049 |

## NEC

| | |
|---|---|
| 3FGX/4FGE/5FG | 499/629/999 |
| 5FGP/6FGP/3PG | 1099/2049/2350 |

## radius

| | |
|---|---|
| 21" Clr. | 1069 |
| Precision Clr.20V/17 | 1599/1219 |
| Precision Pro 24X | 1349 |
| VideoVision Studio | 3399 |
| IntelliColor 20i | 1849 |

**1-800-929-9333** Orders Only

All prices reflect C.O.D. order only & are subject to change without notice!

CIRCLE 434 ON READER SERVICE CARD

LA's LEADING COMPUTER STORE!

LA COMPUTER CENTER

UNIVERSITY, GOVERMENT, AND FORTUNE 1000 P.O.'S, Trained Staff, We ship out of U.S.!

**(310) 473-2535 FAX (310) 312-9041**

*FEDERAL EXPRESS Next Day Shipping! Call for Latest Pricing.*

**Powerbook 180c**

| | |
|---|---|
| 4/80 | $2249 |
| 8/80 | $2399 |
| 4/160 | $2449 |
| 14/160 | $2995 |
| 14/300 | $3245 |

**Powerbook 180**

| | |
|---|---|
| 4/80 | $1699 |
| 4/120 | $1789 |
| 8/120 | $1949 |
| 14/160 | $2599 |
| 14/240 | $2749 |

**Powerbook 165**

| | |
|---|---|
| 4/80 | $1389 |
| 8/80 | $1529 |
| 4/160 | $1499 |
| 8/160 | $1649 |
| 14/160 | $1895 |

**Powerbook 145B**

| | |
|---|---|
| 4/80 | $1149 |
| 8/120 | $1399 |

**DUO'S**

| | |
|---|---|
| 250 4/200 | $1499 |
| 250 12/200/Modem | $2149 |
| 270C 4/240 | $2349 |
| 270C 12/240 W/MDM | $2799 |
| DUO DOCK | $349 |
| DUO DOCK 230HD | $539 |

**Quadra 950**

| | |
|---|---|
| 8/0 | $2799 |
| 8/500 | $3299 |
| 16/1GIG | $3699 |
| 256/2GIG | $13995 |

**Quadra 840AV**

| | |
|---|---|
| 8/230 | $2499 |
| 8/230 W/CD | $2699 |
| 16/1GIG/CD | $3499 |

**Quadra 800**

| | |
|---|---|
| 8/230 | $CALL |
| 8/230 W/CD | $CALL |
| 8/500 | $CALL |

**Quadra 660AV**

| | |
|---|---|
| 8/80 | $1299 |
| 8/230 | $1399 |
| 8/230 w/CD | $1599 |
| 8/500 | $1799 |

**Quadra 650**

| | |
|---|---|
| 8/230 | $1899 |
| 8/230 W/CD | $2099 |
| 8/500 | $2299 |
| 8/500 W/CD | $2499 |
| 16/1GIG | $3099 |

**Quadra 610**

| | |
|---|---|
| 8/160 | $1289 |
| 8/230 | $1499 |
| 8/230 W/CD | $1799 |
| 8/500 | $1899 |
| 8/500/CD | $2199 |

**Quadra 605**

| | |
|---|---|
| 4/80 | $729 |
| 8/80 | $889 |
| 8/160 | $1049 |
| 8/160/CD | $1349 |
| 8/240 | $1149 |
| 8/240/CD | $1449 |

**MORE MACS**

| | |
|---|---|
| Classic II 4/40 | $549 |
| Classic II 4/80 | $599 |
| Classic II Color 4/80 | $679 |
| LCIII 4/80 | $699 |
| MAC II SI 3/40 | $499 |
| Centris 610 4/80 | $749 |
| Centris 650 8/230 | $1449 |
| Cent 650 8/230/CD | $1749 |

**We beat prices!**

**POWER PC**

| | | | | | |
|---|---|---|---|---|---|
| 6100 8/160 | $1499 | 7100 8/250 | $2399 | 8100 8/250/CD | $3699 |
| 6100 8/250/CD | $1899 | 7100 8/250/CD | $2699 | 8100 16/500/WIN | $4349 |
| 6100 16/250/WIN | $2149 | 7100 16/250/WIN | $2849 | 8100AV 16/500/CD | $4649 |
| 6100AV 8/250/CD | $2199 | 7100AV 8/500/CD | $3349 | 8100 16/1GIG/CD | $4995 |

**BLACK BIRD**

APPLE'S HOTTEST NEW POWERBOOK IS IN STOCK!

| | | | | | |
|---|---|---|---|---|---|
| 520 4/160 | $2079 | 540 4/240 | $2839 | 280 4/240 | $2389 |
| 520C 4/160 | $2629 | 540C 4/320 | $4229 | 280C 4/320 | $3299 |
| 520C 8/160 | $2829 | 540C 12/320/EXPMOD | $4899 | 280C 12/320/EXPMOD | $3759 |

**Powerbook DUO 250**

- 68030 33MHz
- 6 HR Battery Life
- 4.2 pounds
- 9" Active Matrix

4/80HD $1399
4/200HD $1499
12/200HD $1849

**Powerbook DUO DOCK $349**

- 2 NUBUS slots
- Superdrive
- Expandable
- Affordable

**RADIUS MONITORS AND GRAPHICS CARDS**

| | | | |
|---|---|---|---|
| Photobooster for Stage II Rocket | $599 | VideoVision Presentation | $1749 |
| Photobooster for Rocket | $599 | VideoVision Studio | $3299 |
| Photobooster for Rocket | $799 | PrecisionColor Pro 24x Interface | $1349 |
| Stage II Rocket | $1499 | PrecisionColor Pro 24xk | $799 |
| Stage II Rocket w/ Macromedia | $1795 | PrecisionColor Pro 24xp | $499 |
| Rocket 33 Accelerator | $999 | PrecisionColor 8xj Interface | $499 |
| RocketShare | $399 | Color Pivot Nubus Interface | $499 |
| SCSI-2 Booster | $269 | PrecisionColor 17" Display | $1299 |
| VideoVision Basic | $1499 | PrecisionColor 20" Display | $1699 |

**APPLE 14" HIRES RGB COLOR DISPLAY NOW ONLY $349**

**APPLE SELECT 310 300DPI POSTSCRIPT 5PPM LASER $599**

**GE 4 YEAR ON SITE WARRANTY!**

To find out how much, locate the product's value on the table below:

| $100 to $350 | $351to $350 | $701 to $1200 | $1201 to $2000 | $2001 to $3000 | $4001 to $5000 |
|---|---|---|---|---|---|
| $49.95 | $79.95 | $139.95 | $169.95 | $199.95 | $259.95 |

**Apple Printers**

| | |
|---|---|
| Personal 300 w/Toner | $499 |
| Select 310 w/Toner | $599 |
| Select 320 w/Toner | $859 |
| Select 360 w/Toner | $1399 |
| Pro 630 w/Toner | $1799 |
| Pro 810 w/Toner | $4399 |
| Portable StyleWriter | $399 |
| Apple Color Printer | $549 |
| Apple Color StyleWritr | $599 |

**Hewlett Packard**

| | |
|---|---|
| DeskWriter 550c | $499 |
| DeskWriter 560c | $569 |
| DeskWriter 310 | $339 |
| DeskJet 1200c (PS) | $1999 |
| LaserJet 4ML | $989 |
| LaserJet 4MP | $1299 |
| LoserJet 4M | $1799 |
| LoserJet 4M Plus | $1995 |
| Sconjet IIcx | $929 |
| 220 Volt Products | CALL |

**CD-ROM Drives**

| | |
|---|---|
| Apple300CD PLUS INT | $269 |
| Apple CD 300 Ext | $389 |
| Apple Power CD | $399 |
| Apple Multimedia CD | $599 |
| NEC 3xi/xe/xp | 499/599/659 |
| NEC 4X (4 spin!) | $995 |

**HARD DRIVES**

| | |
|---|---|
| Quantum 80MB | $129 |
| Quantum 230MB | $199 |
| Quontum 500MB | $399 |
| Quantum 1GIG | $699 |
| External Chosis | $99 |
| Apple 2.5" 20MB HD | $49 |

**SYQUEST**

| | |
|---|---|
| 44MB Int/Ext | $199/$239 |
| 88c Int/Ext | $309/$369 |
| 105 Int/Ext | $389/$449 |

**Apple Monitors**

| | |
|---|---|
| 14" Plus Color | $299 |
| 14" RGB HIRES | $349 |
| 16" RGB HIRES | $799 |
| 17" RGB HIRES | $999 |
| 21" RGB HIRES | $169 |
| AudioVision 14" w/odt | $629 |

**NEC Monitors**

| | |
|---|---|
| 3FGE 15" Color | $549 |
| 4FGE 16" Color | $679 |
| 5FGE 17" Color | $949 |
| 5FGP 17" Color | $1049 |
| 6FGP 21" Color | $2199 |

**SONY Monitors**

| | |
|---|---|
| 1304S 14 Color | $339 |
| 1730 17" Color | $939 |
| 17SE1 17 Color | $1079 |
| 2036 20" Color | $1799 |
| 2038 21" Color | $1999 |

**SuperMac**

| | |
|---|---|
| Thunder II 24bit | $2279 |
| Thunder II Lite | $999 |
| Spec 24 PDQ Plus | $995 |
| Spectrum 8 | $399 |
| 20" Hi Res Color | $2599 |
| 20" Platinum Color | $899 |
| 21" Plat (2pg Mono) | $1039 |
| SuperMatch 20t | $1649 |
| SuperMtch 21 (2pg) | $2399 |

**SCANNERS**

| | |
|---|---|
| Agfa Arcus Plus | $2799 |
| Agfa Transparency | $689 |
| Microtek II | $639 |
| Microtek IIG | $459 |
| ScanMaker IIXE | $959 |
| ScanMaker IISP | $779 |
| UMAX 600le | $689 |
| UMAX UC 840 | $995 |
| UMAX 1260 | $1499 |

All prices are cash discounted. Prices subject to change without notice. Not responsible for typographical errors.

CIRCLE 497 ON READER SERVICE CARD

# WE CARRY EVERYTHING FOR MAC

*See us at MACWORLD EXPO, Boston, Aug. 2-5 Booth 1401*

Big Mac Computers, Inc.
Since 1987
Division of WCN

## Power MACs

| | | |
|---|---|---|
| 8100 | 8/0 | 3497 |
| 8100 | 16/500 | 4295 |
| 8100 | 40/1.8 | 5995 |
| 8100 | 128/2.4 | 10350 |
| 8100 | 256/3.4 | 16500 |
| 8100AV | 8/0 | 4195 |
| 8100AV | 40/1.8 | 6595 |
| 8100AV | 128/2.8 | 10540 |
| 8100AV | 256/34 | 17150 |
| 8100AV | 16/1.7 | 5395 |
| 7100 | 8/0 | 2395 |
| 7100 | 24/500 | 3295 |
| 7100 | 72/1.8 | 7395 |
| 7100 | 136/2.4 | 10795 |
| 7100AV | 16/500CD | 3875 |
| 7100AV | 48/1.7 | 5495 |
| 7100AV | 72/1.2 | 6095 |
| 7100SOFTWINDOW | 16/250 | 3127 |
| 6100 | 8/0 | 1495 |
| 6100 | 8/250CD | 2050 |
| 6100 | 16/500 | 2495 |
| 6100 | 32/1.2 | 3295 |
| 6100AV | 8/250CD | 2450 |
| 6100AV | 16/500 | 2795 |
| 6100SOFTWINDOW | 16/250 | 2295 |

## POWERMAC UPGRADE

| | |
|---|---|
| UPGRADECARD | 682 |
| 6100/60AV | 1395 |
| 7100/66AV | 1695 |
| 8100/80AV | 1995 |

## Quadra's

| | | |
|---|---|---|
| 840AV | 0/0 | 2395 |
| 840AV | 16/500 | 3150 |
| 840AV | 64/2.0 | 5795 |
| 800 | 8/500 | CALL |
| 950 | 8/400 | 3195 |
| 950 | 64/1.2 | 6150 |
| 605 | 8/230 | 1250 |
| 610 | 16/230 | 1895 |
| 650 | 16/500 | 2495 |

## Power Books

| | | |
|---|---|---|
| 540C | 4/320 | 4350 |
| 540C | 12/320M | 5295 |
| 540C | 36/550 | 6295 |
| 540 | 4/240 | 2950 |
| 520C | 8/160 | 2995 |
| 520 | 12/240 | 2895 |
| 280C | 4/320 | 3425 |
| 280C | 12/320M | 3870 |
| 280 | 4/230 | 2489 |
| 180 | 8/80 | 1999 |
| 180 | 14/340 | 2695 |
| 250 | 12/240 | 2195 |

Any Custom Config. Available

## New Items

| | |
|---|---|
| Quick take | 695 |
| Color Pro | 595 |
| Newton 110 | 589 |

## Apple Monitor

| | |
|---|---|
| 14" HiRes | 375 |
| 16"/17" | 1025/CALL |
| 14" AV/20" | 599/1995 |

## Apple Printers

| | |
|---|---|
| 320/630 | 950/1949 |
| 300/310 | 495/650 |
| 360/810 | 1450/4395 |

## ☆☆ Specials ☆☆

| | | |
|---|---|---|
| Centris 660AV | 8/230 | 1495 |
| Nikon CoolScan. | | 1695 |
| Duo 250 | 4/230 | 1695 |
| Duo Dock | | 345 |
| Apple CD 150 | | 139 |
| Micro Disk AV LT 1700 | | 1550 |

❖❖ ADULT CD'S ❖❖
CALL US FOR FAX LIST

## SUPERMAC

| | |
|---|---|
| 20TXL/17T | 1920/995 |
| Thunder/24 | 1575 |
| Thunder IIGS 1360 | 2950 |
| Proof Positive | CALL |

## AGFA

| | |
|---|---|
| Studio Scan | 995 |
| Studio Scan Tranp. | 345 |
| Arcus Plus | 2695 |
| Arcus + Tranp. | 795 |

## UMAX

| | |
|---|---|
| UC630 | 799 |
| UC840 | 995 |
| UC1260 | 1295 |
| UC1200SE | 2495 |
| Tranparency | 495 |

## GCC

| | |
|---|---|
| Selet Press 600 | 3697 |
| Selectpress 1200 | 5595 |
| Color tone | 5995 |

## Kodak

| | |
|---|---|
| Color Ease | 6495 |
| 450GL | 1395 |
| PCD Writer 200 | CALL |

## Hewlett Packard

| | |
|---|---|
| DeskWriter 520 | 289 |
| DeskWriter 550C | 395 |
| DeskWriter 560C | 563 |
| DeskWriter 310 | 295 |
| DeskWriter 1200C | 1875 |
| LaserJet 4ML | 989 |
| Laset Jet 4MP | 1330 |
| LaserJet 4M | 1875 |
| HP 4Si MX | 4240 |
| ScanJet IICX/IIP | 910/695 |
| JetStore 2000E 2GB DAT | 1595 |
| 40GB Optical JukeBox | 13999 |
| 187GB Optical JukeBox | 44900 |
| 1.3GB Optical Drive | 2495 |

## Demo Mac's/Parts

| | | |
|---|---|---|
| 840 | 8/230 | 2395 |
| 800 | 8/230 | 1850 |
| 950 | 8/400 | 2495 |
| SuperFloppy | | 195 |
| Quadra 950 Logic Board | | 1900 |

## $ave on $oftware

| | |
|---|---|
| Microsoft Excell 4.0 | 311 |
| Microsoft Office 3.0 | 456 |
| Microsoft Word 5.1 | 271 |
| Microsoft Power Point 3.0 | 289 |
| Claris Works 2.1 | 189 |
| Quark Express 3.2 | 566 |
| Claris File Maker Pro 2.1 | 253 |
| Aldus PageMaker 5.0 | 538 |
| Microsoft FoxPro 2.5 | 432 |
| Microsoft Project | 425 |
| Connectix Ram Doubler | 59 |
| Now Utilities 4.0.2 | 79 |
| Adobe PhotoShop 2.5 | 548 |
| Illustrator w/StreamLine 5.0.1 | 379 |
| Fractal Design Painter 2.1 | 252 |
| Aldus FreeHand 2.0 | 363 |
| HSC Kai PowerToll 2.0 | 99 |
| Adobe Premier 3.0 | 432 |
| Aldus SuperPaint 3.5 | 56 |
| AltSys Font Grabler 4.0 | 259 |
| Gold Disk Video Director 1.5 | 125 |
| Disney Screen Saver | 29 |
| Kid Pix 1.2 | 33 |
| M.Y.O.B. 4.0 w/Payroll | 106 |
| Mini CAD 5.0 | 495 |
| PIXAR Typestry 2.0 | 159 |
| Lotus 1-2-3 1.1 | 295 |

*Custom configuration for all Audio-Video & Desk Top Publising*

**Exchange any OLD MAC to Power PC**

LEASING AVAILABLE

COREL
PROFESSIONAL
PHOTOS
CD-ROM
HUNDREDS TO CHOOSE FROM
$33.95 ea. or 4 for $119

**Call for APPLE 3rd party products** • International Orders, Visa, MC & AmEx Welcome • Next Day Shipping for U.S.A. & International Prices are subject to change w/o notice • All prices shown are C.O.D. Prices

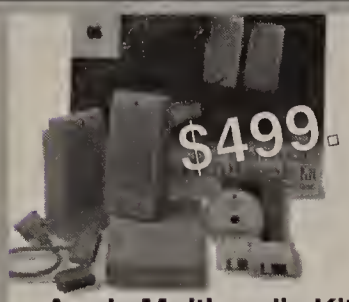
**Tel: (310) 470-7099 (800) 761-1999 • Fax: (310) 470-8099**
10837 SANTA MONICA BOULEVARD • LOS ANGELES, CALIFORNIA 90025

CIRCLE 453 ON READER SERVICE CARD

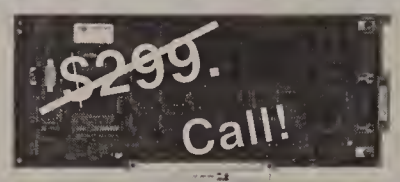
# END OF SUMMER BLOW-OUT!

Duo Dock (no floppy).....$299.
SE 1/20 .....249.
LCII 4/40 .....449.
IIsi 3/40 (new).....449.
PowerBook 100 4/40 .....699.
PowerBook 140 4/40 .....899.
Mac II 0/0 .....279.
*Personal L'writer LS* .....*349.*
Apple 14" Performa Plus.....249.

Quantities are very limited and items will be sold on a first come first sold basis. CPUs are without keyboard.




**Apple Multimedia Kit**
includes: AppleCD 300, Apple Powered Speakers, multimedia CD




**•• E-Machines DoubleColor SX ••**
**Accelerated Color Video Board**
Works with Apple 12", 13", 16", Rasterops Sweet 16, ColorPage T16 II, ColorPage E16, SuperMatch 17, NEC D & FG, Sony 1604S, E-Machines T19II, Third Party 19"

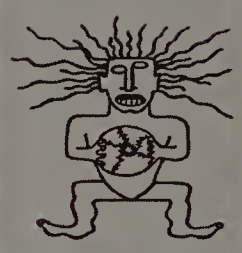
## Misc. Specials!

CD-SC w/Wayzata "Fun House" .....$149.
SE Power Supply .....99.
LC Power Supply & case.....179.
20-Meg External Hard Dr. .....89.
SE-Analog Bd.....129.
1.44 FDHD floppy mech.....199.
ADB Extended Keyboard (3rd Party) .....79.
40-Meg Tape Back-up .....129.
LaserWriter Plus ROM upgrade ..... 99.
PowerBook 140/170 Battery..... 49.
12" Monochrome monitor ..... 169.
LC Logic bd ..... 99.
Mac IIsi Power Supply & Case ..... 149.
ADB Mouse ..... 49.
**40-Meg internal for Mac Portable.....149.**
800k External Floppy..... 110.
5.25 External PC Drive..... 25.
IIcx/IIci/Quadra/IIxv Power Supply ..... 149.
Portable Battery Recharger..... 49.
1200 Baud Personal Modem w/cable..... 29.
40-Meg 5.25 (Internal Mac II/IIx/IIfx) ..... 49.
Nubus Black & White Video bd ..... 49.
**LC Ethernet Board..... 49.**
CRT & Yoke Assy. (Plus & SE) ..... 29.
IIsi Case ..... 29.
Mac Plus Keyboard ..... 59.
20-Meg Internal Hard Dr..... 49.
Portable 2400 Baud Internal Modem..... 99.
40-Meg External Hard Drive..... 149.
Case & Power Supply-Mac II/IIx/IIfx..... 199.
Classic Power Supply..... 99.
Personal NT Logic Bd. ..... 179.
Mac Portable Numeric Keypad..... 29.
8-Bit Video Bd (nubus) .....149.
Personal SC Logic Board.....29.
SuperMac S'view (p'book video i'face).....199.
IIcx case & power supply.....199.
Classic Logic bd .....129.
CRT & Yoke Assy.....49.
Mouse (Mac Plus) .....59.
IIfx 1-Meg SIMMS.....29.
IIvx Case .....129.
Plus Power Supply .....119.
StyleWriter AC adaptor .....49.
400 meg internal hard drive.....399.

## Printers

Imagewriter I .....$169.
Imagewriter I w/c.....229.
Imagewriter II .....299.
Imagewriter LQ .....449.
Personal L'writer LS.....349.
Personal L'writer NT.....649.
Laserwriter II engine (NEW).....699.
Laserwriter IInt.....799.
Laserwriter IIntx.....899.
Personal L'writer NTR .....799.
Stylewriter .....229.
Apple Color Printer.....449.

LC 2/40.
Includes Apple Basic color, keyboard & mouse.



## Used CPU's

Mac IIci 0/0.....$599.
Mac Plus .....299.
Classic 4/40 .....499.
Classic II 4/40 .....599.

## Parts

Logic Boards .....Floppy Drives
Hard Drives .....Power Supplies
Imagewriter Parts.....Laserwriter Parts
Cases .....Portable Parts
PowerBook Parts .....Monitor Parts

**EXPRESS ORDERS ARE OUR SPECIALTY!!**

## Monitors &Video Bds.

Apple 12" mono .....$149.
Apple Basic Color.....129.
Apple 12" color .....169.
Performa Plus (NEW).. .....299.
Apple 14" trinitron .....299.
Apple Portrait.....299.
Apple 2-page mono .....799.
Artscan 17" color (NEW).....599.
Apple 16" color (NEW) .....899.

Radius
Monochrome Pivot .....249.
Color Pivot(anti-glare).....449.
Color Display/20 (trinitron) .....1099.

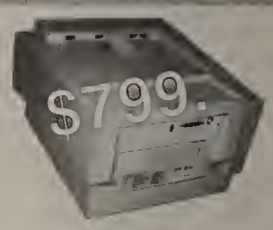
Video Boards
Apple Portrait.....49.
Apple 4-bit.....99.
Apple 8-bit.....129.
Apple 4•8 .....149.
Apple 8•24 .....199.
Apple 8•24GC.....299.

(monitor & video board prices with purchase of CPU)

All equipment is used or demo unless otherwise stated. Equipment carries a 120-day warranty. Returns subject to a 15% restocking fee. Prices subject to change. Prices represent 2% cash discount.

## Upgrades

Mac 512kE to Plus .....$99.
Mac Plus 4-meg RAM .....99.
Mac SE FDHD ROM & Drive.....329.
Mac IIcx to IIci .....399.
Mac SE to SE-30 logic board .....399.
Mac II to IIfx .....1299.
Mac II FDHD (ROM only).....249.
IIci to Quadra 700.....999.




**Personal Laserwriter NTR**
RISC Processor, 4-ppm, 300 dpi, Postscript Level II, IBM compatible

With *FREE* Software & *FREE* Modem!!

**$349.**

**Home Office Starter Package:**
SE 1/20, keyboard, mouse
Software: Write Now (word processor), Super Paint, Full Impact(spread sht), Record Holder Plus(data base)

**Personal L'writer NTR Upgrade**
Upgrade your Personal Laserwriter SC or NT to the NTR for only
**$299.**

**We Buy Macs! Call 318-424-9791**
or FAX 318-424-9771

# Shreve Systems

1200 Marshall St Shreveport La 71101
FAX 318-424-9771 Tech. 318-424-7987

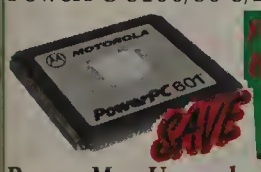
# 800-227-3971

CIRCLE 425 ON READER SERVICE CARD

## L O W E S T  P R I C E S  G U A R A N T E E D

### Power Macintosh CPUs

| | |
|---|---|
| PowerPC 6100/66 8/160 | $1648 |
| PowerPC 6100/66 8/250/CD | $2068 |
| PowerPC 7100/66 8/250 | $2648 |
| PowerPC 7100/66 8/250/CD | $2898 |
| PowerPC 8100/80 8/250 | $3785 |
| PowerPC 8100/80 8/250/CD | $3988 |



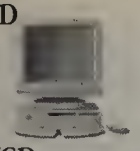

SAVE

PowerPC Logic Board Upgrade Available Call Us!

| | |
|---|---|
| Power Mac Upgrade Card | $695 |
| PowerPC 6100/60 Logic Bd | $1085 |
| PowerPC 7100/66 Logic Bd | $1498 |
| PowerPC 8100/80 Logic Bd | $1798 |

### Mac CPUs

| | |
|---|---|
| Q 610 8/160 DOS | $1439 |
| Q 610 8/230 | $1698 |
| Q 610 8/230/CD | $1849 |
| Q 650 8/230CD | $2129 |
| Q 660AV 8/230 | $1379 |
| Q 660AV 8/230/CD | $1619 |
| Q 950 8/0 | $2769 |
| Q 950 24/1GB | $4119 |
| Q 840AV 8/230 | $CALL |
| Q 840AV 8/230 W/CD | $CALL |



### PowerBooks

| | |
|---|---|
| Duo 230 4/120 | $1399 |
| Duo 230 4/80 W/MINI DOCK | $1399 |
| DUO 280 4/240 | $2395 |
| Duo 280 12/240/MODEM | $2829 |
| Duo 280c 4/320 NEW! | $3349 |
| Duo 280c 12/320 MODEM | $3829 |
| Duo Dock FOR ALL DUOs | $499 |
| Duo Dock II | $898 |
| APPLE DUO EXPRESS MDM | $299 |
| PB 145B 4/80 | $1189 |
| PB 165 4/80 | $1395 |
| PB 520 4/160 NEW 040 | $2028 |
| PB 520c 4/160 NEW 040 | $2589 |
| PB 540 4/240 NEW 040 | $2849 |
| PB 540c 4/320 NEW 040 | $4395 |

### Monitors

| | |
|---|---|
| Apple 14 Color Plus | $309 |
| Apple 14" Color Trinitron | $359 |
| Apple 14" AV | $629 |
| Apple 17" Color | $989 |
| Apple Multiple scan 20" | $1929 |
| Sony 17SE Color Monitor | $1198 |
| SuperMac 17 T Color | $989 |
| SuperMac 20" Plus Monitor | $1539 |
| SuperMac 20- TXL | $2349 |

### Video Boards

| | |
|---|---|
| Spectrum Power 1152 | $1189 |
| Spectrum 24 seriesIV | $839 |
| Radius 24XP | $455 |
| Radius Precision Pro 24x | $1369 |
| Radius Precision Pro 24xk | $ 755 |

### Apple Printers

| | |
|---|---|
| StyleWriter II | $279 |
| Color StyleWriter PRO | $659 |
| Personal LaserWriter 320 | $898 |
| LaserWriter Select 360 (10 PPM) | $1448 |
| LaserWriter 360 Fax Modem | $298 |
| LaserWriter Pro 630 | $1989 |
| LaserWriter Pro 810 | $4298 |

### Hewlett Packard

| | |
|---|---|
| HP DeskWriter 320 NEW! | $299 |
| HP DeskWriter 560c | $589 |
| HP DeskWriter 310 w/CSF | $389 |
| HP LaserJet 4 ML | $989 |

*Let us Do Your Custom Config.*

### CD TITLES

| | |
|---|---|
| WORLD ATLAS | $49 |
| ENCYCLOPEDIA GROLIER | $49 |
| ANIMALS | $49 |
| OCEANS BELOW | $49 |

### Peripherals

| | |
|---|---|
| Global Village PP Gold | $279 |
| Global Village pp Mercury | $359 |
| Apple Express Modem | $299 |
| Geoport Adaptor | $139 |
| Memory for all mac's | save |
| PowerBook Battery | $69 |
| U-max Scanners | CALL |
| Micronet 88MB Rem. Drive | $449 |
| Apple PB carrying Case | $49 |
| ClarisWorks Bundle | $129 |

**Look For Monthly Specials Highlighted In Black**

Mon-Fri 9:00 To 6:00 *Since* 1988
SAT 10:00 TO 2:00 PST
1941 Freeman #B
Signal Hills, CA 90804
Fax (310) 498-0032

PRICES REFLECT CASH DISCOUNT & SUBJECT TO CHANGE W/O NOTICE

**Mac *Express*** U.S.A

**(310) 498-1230**

CIRCLE 443 ON READER SERVICE CARD

---

## EXTERNAL DRIVE HOUSINGS

| | |
|---|---|
| Full Height | 145.00 |
| Half Height | 89.00 |
| 3.5" Mini Housing | 89.00 |
| 2.5" Pocket Housing | 89.00 |

- Closed or Open Front Bezel
- Includes FWB Software & all necessary cables.
- 110/220 VAC Auto Switching Power Supply
- Full Height Cabinet will hold (2) 3.5" or (2) 5.25" HH Drives

DATAMAX
26212 Dimension Dr. #220
Lake Forest, Ca 92530

800-321-4962
Int'l 714-586-9907
Fax 714-586-6959

MC,VISA,AMEX. GOVT. & UNIVERSITY P.O.'S WELCOME

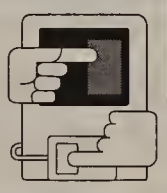
CIRCLE 552 ON READER SERVICE CARD

---

## MacBYTE

SERVING MACUSERS SINCE 1989

LOW & HIGH END
CUSTOM SETUPS



CASH FOR MACS

FAX 310-317-1583

BUY • SELL • TRADE

**800-432-2983**

Open Monday-Saturday
22775 PCH, Malibu, CA 90265

CIRCLE 428 ON READER SERVICE CARD

---

## SOMETHING FOR NOTHING

**Free Catalog Of Used Macintosh Computers and Peripherals**

While Mac outfits come and go, we just keep on doing what we do best. We've been refurbishing and selling used computers for 11 years. *Your satisfaction is guaranteed with us!*

**1-800-821-3221**

**Call Anytime!**

PO Box 4059
Logan, UT 84323-4059
International (801) 755-3360
Fax: (801) 755-3311

Sun Remarketing, Inc.

CIRCLE 424 ON READER SERVICE CARD

---

## WE BEAT ANY PRICE!

MAC TALK

CPU's:
**POWER PC & POWER PC Upgrades**
Quadras & Powerbooks
All models available
**DISPLAYS:** Apple, SuperMac, NEC, RasterOps, Radius, Sony and others.
**SCANNERS:** Microtek, Umax, HP, Sharp & More.
**PRINTERS:** Apple, HP, NewGen, GCC.
**MODEMS:** Global Village

*DEALERS AND INTERNATIONAL SALES WELCOME!*

**800-622-5557**

(818)880-6116
FAX
(818)880-6103

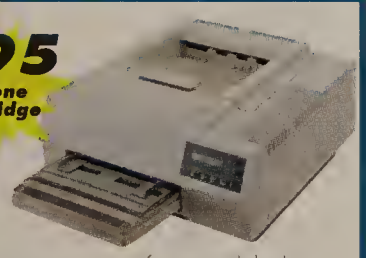
22941 Ventura Blvd., Suite H991
Woodland Hills, CA 91364

CIRCLE 540 ON READER SERVICE CARD

---

## *The SX-29000 Fast 600 dpi Laser Printer!*

**$1295** *Includes one toner cartridge*



The SX-29000 is a combination of high-quality, high-performance products. The marking engine is the popular Canon SX—the same 8 ppm printing mechanism used in the most popular laser printers.

- 8MB RAM expandable to 16MB
- AMD RISC processor
- 850 x 850 dpi equivalent gray scale
- PostScript® language compatible with 35 built-in scalable fonts using PhaenixPage
- Simultaneous active ports for use with both PCs and Macs
- Automatic PCL and Postscript emulation switching
- SCSI port for hard-drive based font library

the PRINTER WORKS
Since 1982

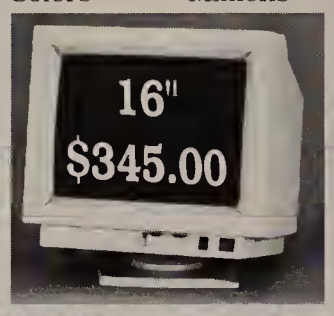
**Order Toll Free**
*1-800-225-6116*
3481 Arden Road, Hayward, California 94545

PRICE BREAKERS

72 DPI
WYSIWYG

MITSUBISHI COLOR MONITOR

| | |
|---|---|
| FG6601 | $345.00 |
| CRT Size | 16"/15" View |
| Resolution | 832 x 624 |
| Dot Pitch | 0.26mm |
| Colors | Millions |




The Video Works
25 Beta Ct, San Ramon, CA. 94583
800-838-1031

CIRCLE 403 ON READER SERVICE CARD

MAC MULTIMEDIA

Radius, Apple & Sony *Call Now*

MEMORY LOWEST PRICES

LOVIÉL
For the Life of Your Mac

Loviél 2X-$299
Loviél 3X-$499
INCL. 2 TITLES,
CABLE
& FWB CACHING SOFTWARE
BUNDLE : SPEAKERS & TWO TITLES $79

Loviél CARRIES THE FINEST HARD DRIVES & REMOVABLE STORAGE FORMATTED WITH CHARIS MAC, ANUBIS UTILITY

DIGITAL VIDEO SYSTEMS

Call for a FREE Color Catalog

WEST 800-688-3696
EAST 800-688-3697

CIRCLE 534 ON READER SERVICE CARD

Media Cartridges

| Optical | SyQuest | |
|---|---|---|
| 128MB $32 | 270MB | $64 |
| 256MB $65 | 200MB | $81 |
| 370MB $ | 105MB | $62 |
| 650MB $110 | 88MB | $74 |
| 1.3GiG $120 | 44MB | $54 |

TDK Recordable CD's
600MB $20 640MB $21

Quantum Drives

| | EXT. | INT. |
|---|---|---|
| LPS 270MB | $339 | $279 |
| LPS 340MB | $349 | $289 |
| LPS 540MB | $504 | $444 |
| Pro 1.08 Gig | $849 | $789 |

Monthly Special's

| | EXT. | INT. |
|---|---|---|
| Seagate 3.4 Gig | $2199 | $2139 |
| IBM 2.1 GIG | $1339 | $1279 |
| Olympus 128 MO | $810 | $760 |
| NEC 2X CD-ROM | $295 | $235 |
| Kodak PCD Writer | $4607 | |

Software, Cable, 25 Disc's

Optical Drives

| | EXT. | INT. |
|---|---|---|
| Fujitsu 128 MO | $810 | $760 |
| Ocean 256 MO | $950 | $909 |
| Ocean 370 MO | | |
| Ricoh 650 MO | | |
| Tahiti III 1.3 MO w/ 4MB Cache | $2786 | $2716 |

SyQuest Removables

| | EXT. | INT. |
|---|---|---|
| 270MB | $549 | $505 |
| 200MB | $529 | $495 |
| 105MB | $395 | $339 |
| 88/44MB | $410 | $364 |

ALL MERCHANDISE GUARANTEED NEW

Fax: 714-573-5795

Visa NEW TECH CONSULTING MC
800-797-6710 SINCE 1988 714-838-0529

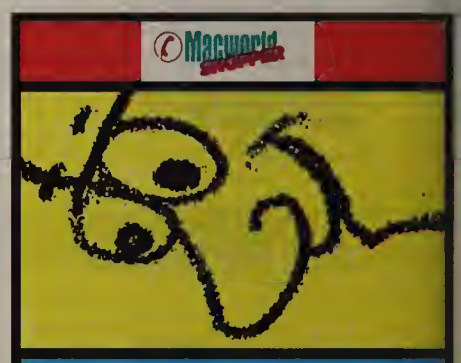
CIRCLE 567 ON READER SERVICE CARD

Wanted: Used Macs!

- *We'll pay you cash* for used Mac equipment! Call now for FREE quote.
- We also sell refurbished Macs w/1-yr warranty & 10-day money-back guarantee. All models.

RENTEX (800) 545-2313

CIRCLE 521 ON READER SERVICE CARD



HOT SHOPPER PRODUCT CATEGORIES HELP BUYERS FIND THE PRODUCTS THEY NEED FAST.

1-800-334-KIWI

Quadra

| | |
|---|---|
| 605 4/80.....$825 | 605 w/software.....Call |
| 605 8/160.....$1049 | 650 8/230.....$1999 |
| 605 8/250.....$1149 | 650 16/500.....$2575 |

Power Mac

| | |
|---|---|
| 6100 8/160.....$1649 | 7100 16/500.....$3199 |
| 6100 16/500.....$2299 | 7100 24/1Gig.....$3799 |
| 6100AV 8/250CD.$2375 | 8100 24/1Gig.....$4999 |

PowerBook

Please call for all Powerbook Prices.
145b, 165, 180, 520, 520c, 540, 540c, 280, 280c

Monitors & Printers

| | |
|---|---|
| Magnavox 14".....$249 | Stylewriter II.....$275 |
| Apple 14" Trinitron.$499 | Deskwriter 520.....$289 |
| NEC 4FGe.....$625 | Deskwriter 560C...$575 |
| Sony 17SE1.....$1135 | HP Laserjet 4ML...$975 |
| Radius Monitors.....Call | Laserwriter 360..$1449 |

Specials

| | |
|---|---|
| 660AV 8/230.....$1399 | 80mb int. HD.....$115 |
| LC III & IIvx.....Call | 160mb int. HD.....$159 |
| IIsi & IIci.....Call | 40mb Pwrbook HD.$49 |
| Laser Select 310.....Call | 256k LC III Vram.....$18 |

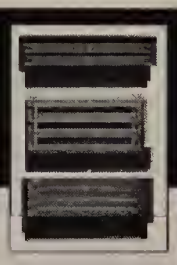
Trade-Ins Wanted
All products in this ad are NEW.
Visa & Mastercard No Surcharge.
Better Business Bureau Member.

Kiwi Computers, PO Box 67381, L.A., CA 90067
Toll Free (800) 334-5494 Fax (310) 286-9667
In California and Overseas (310) 553-4507
Hours: Mon-Fri 7.30am-6pm, Sat 9am-2pm PST

All products have a 1 year warranty.
Returns are subject to a 15% restocking fee.
Prices subject to change. Quantities may be limited.
Not affiliated with Kiwi Software, Inc.

CIRCLE 404 ON READER SERVICE CARD

TOTAL MEMORY RECYCLE



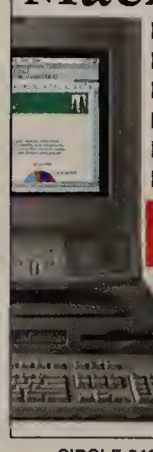
Simm$aver®
PATENT PENDING

- Save your 30-pin SIMMS into one 72-pin SIMM. For Power Macs, Quadra's, Performas, and LC's.
- Easy installation. Guaranteed.
- Send us your FX and Q900/950 SIMMs. We'll turn them into 72-pin SIMMs.

1-800-636-7281
VISA Compu-Circle MasterCard
Tel (316) 264-2244 • Fax (316) 264-4445

CIRCLE 402 ON READER SERVICE CARD

Macintosh



Power Mac 6100 8/160.....$1,576
Power Mac 6100/AV 8/250CD.....$2,251
Power Mac 7100 8/250.....$2,512
Power Mac 7100/AV 8/500CD.....$3,455
Power Mac 8100 8/250.....$3,610
Power Mac 8100/AV 16/500CD....$4,808

Quadra 605 4/80.....$769
Quadra 840/AV 8/230....$2,713

1 800 404-9976
MAC NET
THE NEW FRIENDLY SERVICE

CIRCLE 543 ON READER SERVICE CARD

MAC MEMORY, CALL FOR LOWEST PRICE

NEW POWER PC MEMORY LIFETIME GUARANTEE

30 PIN SIMMS
1X8-80/70
1X8 FX
2X8-80/70
4X8-80/70
4X8 PAL
4X8 FX
8X8-70
16X8-70

72 PIN SIMMS
1X32-70/60 4MB
2X32-70/60 8MB
4X32-70/60 16MB
8X32-70/60 32MB
NON COMPOSITE

VRAM
256K VRAM,
512K VRAM
4 & 8 BIT
VRAM SETS
1MB VIDEO ZIPS

DRAM
256K DIPS,
1MB DIPS

POWER BOOK
100:
2MB,4MB,6MB
140,145,170
2MB,4MB,6MB
160,165,180
4MB,6MB,8MB,10MB
165C,180C
4MB,6MB,8MB,10MB
DUO 210,230,250,270C
4MB,8MB,12MB,
14MB, 20MB,28MB
FPU
68882-25,
68882-33
PMMU CHIPS

WE ACCEPT M.C, VISA & DISCOVER. UNIVERSITY, GOVERNMENT AND CORPORATE P.O 'S WITH APPROVED CREDIT

MEMORY FOR ALL PRINTERS

1-800-662-SIMM (7466)

DATA MEMORY SYSTEMS INC.
15 UNION ST. LAWRENCE, MA. 01840
TEL. 508-683-2325 ESTABLISHED 1963 FAX 508-975-5232

CIRCLE 447 ON READER SERVICE CARD

# PERIPHERAL 800 256-6581

**Call now! We have all sizes of memory for the new Blackbird PowerBooks!**

## Standard SIMMs

| | |
|---|---|
| 1 Megabyte | 40.00 |
| 2 Megabyte | 79.00 |
| 4 Megabyte | 145.00 |
| 8 Megabyte | 329.00 |
| 16 Megabyte | 589.00 |

## Video RAM

| | |
|---|---|
| 4 Bit to 8 Bit Upgrade (Mac II/IIx cards) | 24.00 |
| 256K Quadra 700/900, Performa 46X VRAM | 18.00 |
| 256K Quadras, LC 520 VRAM | 19.00 |
| 256K Centris, LCIII, Performas VRAM | 19.00 |
| 512K VRAM for LC, LCII, IIvx, IIvi, DuoDock, and Performas | 36.00 |

## 68882 FPU Boards

| | |
|---|---|
| 25 MHz for Macintosh LC | 55.00 |
| 20 MHz w/2 slots for Mac IIsi | 119.00 |
| 25 MHz for Mac Classic II | 55.00 |

## Cache Cards, Etc.

| | |
|---|---|
| 128K Cache Card for LCIII and Performa 450 | 159.00 |
| w/25 MHz FPU | 209.00 |
| IIsi 64K Cache Card | 159.00 |
| IIci 64K Cache Card | 125.00 |
| IIsi 2-slot Card and 68882 | 119.00 |

## Math Coprocessors

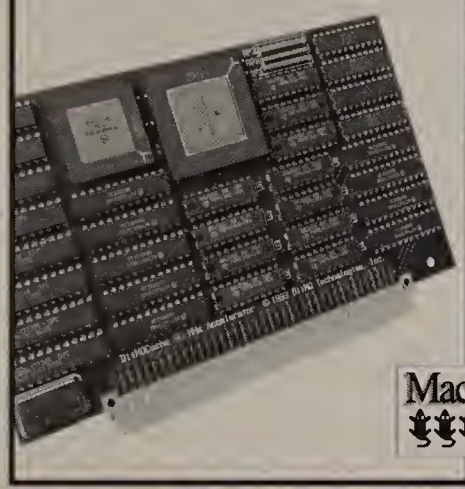
| | |
|---|---|
| 68882 16 MHz FPU | 39.00 |
| 68882 20 MHz FPU | 45.00 |
| 68882 25 MHz FPU | 49.00 |
| 68882 33 MHz FPU | 59.00 |
| 68882 50 MHz FPU | 99.00 |
| 68881 16 MHz FPU | 45.00 |

## Miscellaneous

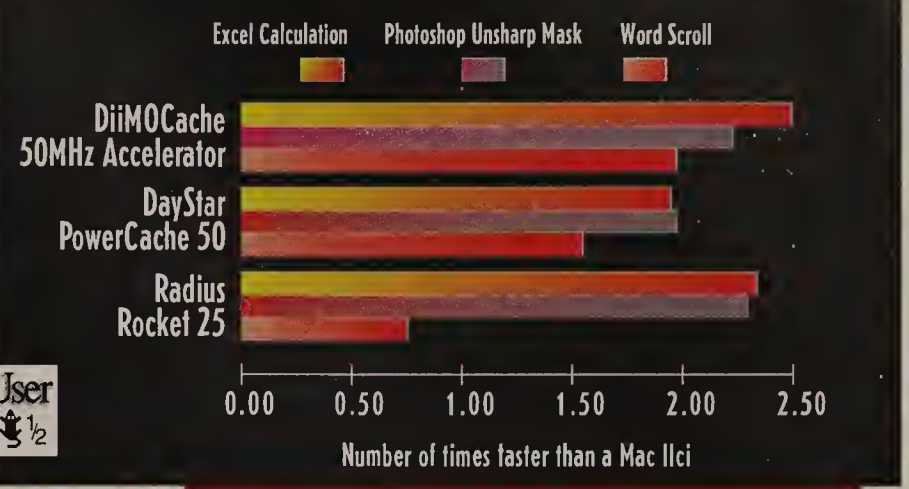
| | |
|---|---|
| LaserWriter Pro 810 4 MB upgrade | 275.00 |
| LaserWriter Pro 810 8 MB upgrade | 549.00 |
| T.I. MicroLaser 1 MB | 49.00 |
| Mac Classic 1 MB Board | 75.00 |
| 68851 16MHz PMMU | 89.00 |
| if requested, MODE 32 software included free w/PMMU | |
| Mac Portable 3 MB Card | 369.00 |
| Mac Portable 4 MB Card | 399.00 |
| Mac Portable 5 MB Card | 449.00 |

Due to volatility in the market all prices and availability are subject to change without notice.

## DiiMOCache 50MHz Accelerator $445



MacUser ★★★★½




**SAVE MONEY! Peripheral Outlet will buy back your old memory at great prices! Call for details.**

### NEW PRODUCTS!

| | |
|---|---|
| LaserWriter Pro 810 4 MB Upgrade board | 275.00 |
| LaserWriter Pro 810 8 MB Upgrade board | 549.00 |
| PowerBook Duo 20 MB/28 MB Modules | 949.00/1349.00 |
| All sizes PCMCIA cards for Newton | Call For Pricing! |

## 72 Pin Memory *for the new Macs!*

| | 80ns | 70ns | 60ns |
|---|---|---|---|
| 4 Megabyte | | | |
| 8 Megabyte | | | |
| 16 MB-Non Composite | | | |
| 32 MB-Non Composite | | | |

**Prices Changing Daily— Call for Best Prices!**

## PowerBook Memory

| | 100 | 140/170 | 160/180 | 165c/180c | Duos |
|---|---|---|---|---|---|
| 2 MB | 89.00 | 89.00 | ---- | ---- | ---- |
| 4 MB | 172.00 | 145.00 | 149.00 | 149.00 | 195.00 |
| 6 MB | 249.00 | 209.00 | 215.00 | 215.00 | 215.00 |
| 8 MB | ---- | ---- | 289.00 | 289.00 | 319.00 |
| 10 MB | ---- | ---- | 349.00 | 369.00 | ---- |
| 12/14 MB | ---- | ---- | ---- | ---- | 569/649 |
| 20/28 MB | ---- | ---- | ---- | ---- | 875/1249 |

## Newton PDA Upgrade Products

| | |
|---|---|
| 512K Static RAM Upgrade | 125.00 |
| 1 Megabyte Static RAM Upgrade | 169.00 |
| 2 Megabyte Static RAM Upgrade | 289.00 |
| 2 Megabyte Flash Card Upgrade | 259.00 |
| 4 Megabyte Flash Card Upgrade | 425.00 |
| 8 Megabyte Flash Card Upgrade | 749.00 |
| 16 Megabyte Flash Card Upgrade | 1375.00 |

Speed up everything you do by up to 400% with this 50MHz 68030 accelerator by DiiMO Technologies. Awarded 4 1/2 Mice in MacUser's April 93 Accelerator Review, the DiiMOCache 50MHz 68030 Accelerator outperformed not only DayStar's PowerCache 50MHz but also most of the 68040 25MHz accelerators. And it costs less too! For the LC, LCII, LCIII, II, IIx, IIcx, IIci, IIvx, IIvi, IIsi, SE/30, and Performa 600 and 400 series. Call for adapter prices.

**DiiMOCache 50MHz 68030 Accelerator**
without FPU $445.00 with FPU $519.00

**68040** PROCESSOR WITH FPU AS LOW AS **$249.00**
(25MHz, WITH 'LC' TRADE IN) $299.00 WITHOUT TRADE
FOR THE CENTRIS/QUADRA 605, 610, 650, AND 660AV, AND THE PERFORMA 475/476 AND LC 475.
33MHz FOR QUADRA 650 & LC 575 - $399.00
40MHz- $699.00 Heat Sink- $19.00

**TOLL FREE TECH SUPPORT**
LIFETIME WARRANTY ON ALL MEMORY PRODUCTS
ORDER BY 6:30 PM CST FOR SAME DAY SHIPPING*
OVERNIGHT DELIVERY FROM $8.00 *some restrictions apply

## PERIPHERAL OUTLET, Inc.

327 East 14th, PO Box 2329 • Ada, Oklahoma 74820
405/332-6581 FAX 405/436-2245 • AppleLink-PERIPHERAL
HOURS: Monday-Thursday 7AM-7PM CST, Friday 7AM-6PM
INTERNATIONAL TOLL FREE: France- 0590 1997, UK- 0800 962 058

CIRCLE 454 ON READER SERVICE CARD

# THE LLB COMPANY INC.

4MB 60ns 72 pin SIMM $145

VRAM Offer is for a Limited Time.

## POWERPC MEMORY $145

### POWERPC, CENTRIS, QUADRA, LC III

| | |
|---|---|
| 4MB-70ns / 4MB-60ns | $145 / $145 |
| 8MB-70ns / 8MB-60ns | $294 / $300 |
| 16MB-60ns non-composite | $615 |
| 32MB-60ns | $1212 |

### STANDARD 30 PIN MEMORY

| | | | |
|---|---|---|---|
| 1x8x80 | $40 | 4x8x80 (IIfx) | $155 |
| 1x8x70 | $42 | 4x8x70 (IIfx) | $157 |
| 1x8x100 | $39 | 4x8x80 (II,IIx) | $155 |
| 2x8x80 | $77 | 4x8x70 (II,IIx) | $157 |
| 2x8x70 | $79 | 8x8x70 (IIfx) | $349 |
| 4x8x80 | $145 | 16x8x70 (Low Profile) | $625 |
| 4x8x70 | $147 | 16x8x70 (IIfx) | $635 |

### PRINTER MEMORY

| | |
|---|---|
| LaserWriter 810 4MB / 8MB | $309 / $549 |
| HP 4, 4m 4MB / 8MB | $179 / $339 |
| TI PS17+35 1MB | $56 |

### POWERBOOK MEMORY

| | |
|---|---|
| PB140-170-4/6 | $147 / $225 |
| PB160-180-4/6/8/10 | $149 / $219 / $329 / $359 |
| PB165C-180C-4/6/8/10 | $155 / $232 / $319 / $405 |
| DUO 210 - 280C 4/6/8/ | $169 / $205 / $300 |
| DUO 210 - 280C 12/14/20/28 | $519 / $595 / $932 / $1430 |
| PB 520 - 540C 4/8/16/32 | $259 / $459 / $879 / $1709 |

### POWERBOOK ACCESSORIES

| | |
|---|---|
| Battery Charger / Conditioner | $75 |
| Long Life Battery 140-180c | $59 |
| AutomobileAdapter 100-180 / DUO | $69 |
| Newer Technology DUO Micro Dock SCSI / Color | $135 / $259 |
| Rasterops Duomate 8 / 16 SC | $269 / $559 |

### VIDEO RAM / FPU'S ETC...

| | |
|---|---|
| Video RAM 256K / 512K | $20 / $38 |
| 16MHz LC - Classic II | $59 |
| 16MHz Color Classic | $49 |
| 25MHz LC III | $69 |
| 35MHz Performa 600 / Duo Dock FPU | $65 |
| Centris FPU | $319 |
| MicroMac SIMMdoubler / SIMMchanger | $137 / $98 |

We have a Lifetime Warranty on all our memory products. Prices and availablity are subject to change without notice.

## MEDIA

### SONY

| | |
|---|---|
| 1.3 / 1.2GB Optical | $119 |
| 650 / 600MB Optical | $109 |
| 128MB 3.5" Optical | $46 |
| **SONY Floppy Disks** | |
| 3.5" DD / 3.5" HD | $7.50/$12 |
| 3.5" HD Pre-Formated | $13.50 |
| **SONY CD-R** | |
| 650MB/74 Min. | $25 |
| 553MB/63 Min. | $23 |
| **SONY 4mm DAT** | |
| 4MM 60M 1.3GB | $13 |
| 4MM 90M 2GB | $15 |
| 4MM 120M 4GB | $24 |
| Cleaning Cartridge | $12.50 |
| **SONY 8mm DAT** | |
| 8MM 15M 600MB | $12 |
| 8MM 54M 2.4GB | $14 |
| 8MM 112M 5GB | $16 |
| Cleaning Cartridge | $28 |

## OTHER MAC NEEDS

| | |
|---|---|
| Action 2-Button ADB Mouse | $45 |
| Datadesk Mac 101 Keyboard | $120 |
| Keytronics Keyboard 101 | $129 |
| Kensington Turbo Mouse | $106 |
| Costar Stingray Turbo Mouse | $85 |
| Port Juggler Serial Switch | $75 |
| Wacom ARTZ Tablet | $315 |
| Wacom 12 x 12 Digitizer | $689 |
| Compact Mac Tool Kit/PB Tool Kit | $8 / $7.50 |
| SIMM Remover (30 pin only)/Grounding Strap | $3/$1.50 |
| Modem Cable/High-Speed Hand Shaking | $7.50 / $12 |
| Printer Cable DIN-8 to DIN-8/DIN-8 to DB-25 | $7.50 |
| Newer Technology VSO Q700/900/950/IIFX | $259 |
| Wrist Saver Keyboard or Mouse Pad/Bundle | $12/$20 |
| SCSI Cables M25-M50 18"/M25-M50 6' | $8 / $19 |
| SCSI Cables M50-M50 18"/M50-M50 6' | $9 / $19 |

## SYQUEST 270MB CARTRIDGES $65

| | |
|---|---|
| SyQuest 44MB Cartridge 1-4/5-9/10+ | $59 / $58.50 / $57.50 |
| Pre-Formatted | $65 |
| SyQuest 88MB Cartridge 1-4/5-9/10+ | $69 / $68 / $67 |
| Pre-Formatted | $75 |
| SyQuest 105MB Cartridge 1-4/5-9/10+ | $62 / $61 / $60 |
| SyQuest 200MB Cartridge | $79 |
| SyQuest 270MB Cartridge 1-4/5-9/10+ | $65 / $64 / $63 |

## MODEMS

Supra v.32bis S/R Fax 14.4 w/ C & S $225

| | |
|---|---|
| Supra v.32bis S/R Fax 14.4 w/ C & S | $225 |
| Supra V Mail Upgrade (V.32 bis $225 model) | $89 |
| Supra v.32bis S/R Fax 14.4 LC w/ C & S | $159 |
| Supra 2400 Modem ONLY | $59 |
| Supra 2400 Modem S/R Fax 9600 w/ C & S | $139 |
| Supra v.32bis PowerBook 14.4 | $229 |
| Supra 28.8 External w/ C & S | $325 |
| Global Village OneWorld Fax 1 line / 2 line | $859 / $1299 |
| Global Village OneWorld Remote Access Server-2 | $1639 |
| Global Village Teleport / Powerport (Bronze) 24/96/48 | $97 |
| Global Village Teleport / Powerport (Gold) 14,400 | $279 |
| Global Village Teleport / Powerport (Mercury) 19,200 | $329 |
| U.S. Robotics Sportster 14.4 S/R Fax | $237 |
| Prometheus PowerBook 14.4 w/Voice | $309 |
| Zoom Pocket 14.4 w/Voice | $239 |
| Zoom 14.4 w/Voice | $189 |
| Zoom V. fast 28.8 modem | $249 |

## VERBATIM AS LOW AS $23

| | |
|---|---|
| 128MB 3.5" Optical | $30 |
| 128MB 3.5" Optical, Apple Format | $36 |
| 256MB 3.5" Optical | $59 |
| 600 / 650MB 5.25" Optical (512 b/s / 1024 b/s) | $85 |
| 1.2 / 1.3GB Optical (512 b/s / 1024 b/s) | $112 |
| DC2000 with QIC40 | $14.90 |
| DC2080 with QIC30 | $16.90 |
| DC2120 with QIC80 | $19.50 |
| 4mm 90m / 60m | $11.50 / $8.90 |
| 8mm 112m | $10 |

CD - Recordable 640 / 74 min $23

(For use in Recordable CD-ROM Drives)

WE ALSO CARRY FARALLON & DAYNA NETWORKING PRODUCTS, CABLES, PRINTER SUPPLIES, KEYBOARDS, MICE, SCANNERS..... CALL US TODAY

FAX 206-454-7302 Educational/ Government 1-800-848-1424 Fortune 1000 Companies 1-800-848-1418

CIRCLE 563 ON READER SERVICE CARD

# YOUR MEMORY STORE & MORE...

## SYQUEST DRIVES ONLY $289

105MB SyQuest $429

88c (R/W 44) SyQuest $439

## Rumi SYQUEST DRIVES

Rumi 44MB SyQuest *(FREE Cartridge)* ..... $289
Rumi 88c (R/W 44) SyQuest *(FREE Cartridge)* ... $439
Rumi 105MB SyQuest *(FREE Cartridge)* ..... $429
Rumi 200MB SyQuest *(FREE Cartridge)* ..... $579
Rumi 270MB SyQuest *(FREE Cartridge)* ..... $579

## Rumi ..... $299 CD-ROM DRIVE

•Doubledpeed, Multisession Photo CD.
NEC CDR Mechanism.

Rumi CD-ROM DRIVE BUNDLE! $549

CD-ROM Bundle Includes RUMI CD-ROM Drive, Sony Speakers and 4 CD Titles
•World Atlas •Myst •Lunicus
•Where in the World is Carmen Deluxe
$549

## Rumi DAT DRIVES

Rumi 2.0GB DAT Drive
w/Retrospect (Includes Tape) .... $1069
Rumi DDS / 8.0GB
w/Retrospect (Includes Tape) .... $1209

## Rumi OPTICAL DRIVE

128MB Optical Drive
Double Speed
with TEAC Mechanisam

5 VERBATUM CARTRIDGES FREE $995

## Rumi HARD DRIVES

Rumi 85MB Internal ..... $209
External (Quantum) ..... $279
Rumi 170MB Internal ..... $219
External (Quantum) ..... $299
Rumi 270MB Internal ..... $289
External (Quantum) ..... $339
Rumi 525MB Internal ..... $545
External (Quantum) ..... $619
Rumi 1.0GB Internal ..... $879
External (Quantum) ..... $939
Rumi 1.2GB Internal ..... $1089
External (Quantum) ..... $1109
Rumi 2.0GB Ext (Seagate Barracuda) ..... $2269
Rumi Powerbook 210 Int (Toshiba) ..... $409

## MORE DRIVES

PMO Tahoe 230MB Optical ..... $979
PMO Sierra 1.3GB Optical ..... $2789
PMO Sierra 2.6GB Optical ..... $5759
PMO RCD 202 Recordable CD-ROM ..... $3629
PLI Quick Array 1GB ..... $2499
PLI Quick Array 2GB ..... $3429
PLI Quick Array 4GB ..... $5749
PLI 1.3GB Maxoptics (Tahiti III Mech) ... $3449
PLI 10Gg Dat Drive ..... $1459

## SCANNERS / PRINTERS

HP IICX ..... $999
HP IIP ..... $799
UMAX UC630 PS/LE ..... $769
UMAX UC840 ..... $999
UMAX 1260 ..... $1349
Microtek ScanMaker IIG ..... $499
Microtek ScanMaker IISP ..... $829
Microtek ScanMaker II ..... $685
Microtek ScanMaker IIXE ..... $925
Microtek ScanMaker IIER ..... $1329
Microtek ScanMaker 35T ..... $1398
Nikon Coolscan ..... $2039
Citizen Notebook II Color Printer . $378
Notebook II Ni-cad Battery Pak ..... $69
Labelwriter II PLUS ..... $240
GCC Write Impact ..... $549

HEWLETT® PACKARD

HP Deskwriter Printers Now Available

## NETWORKING

### SONIC

Sonic Ether 10T/Thin-II/LC ..... $92
Sonic Micro SCSI PowerBook ..... $237
Sonic FriendlyNet 10T/Thin ..... $53
Sonic Starbase T9 ..... $198
Sonic HubLite 5 port ..... $145
Sonic PowerBridge ..... $92

### ASANTE

Asante Friendly Net Adapters ..... $59
Asante Mac Con-i Nubus 10T ..... $159
Asante Mini EN-SC 10T PB ..... $259
Asante Net Extender Hub 10-T ... $179
Asante Mac Con-i LC Series T ..... $159
Asante SCSI w/Thick/Thin/10-T $299

Dayna and Farallon Products Also Available

## MONITORS / VIDEO

### RASTEROPS

Horizon 24 ..... $2249
PaintBoard Lightening ..... $885
PaintBoard Professional ..... $1799
PaintBoard 8Li /20"/16"/13" .... $339
24STV ..... $769
24Mx ..... $499
Movie Pak 2 Pro Suite ..... $3479
RasterOps Clearvue
Color 17" Monitor ..... $949
RasterOps 20" MultiScan
Color Display ..... $1619
RasterOps 20T
Color Monitor ..... $2479

RASTEROPS®
THE ART & SCIENCE OF COLOR™

Paintboard Professional $1799

E-Machines Futura IISX . $459
E-Machines Ultura LX .... $829
Sony 17SE1 ..... $1249
Sony GDM 2036s
20" MultiScan ..... $2039

"Customer Service Guaranteed!
Depend on LLB for Quality, Service and Value

- Airborne Express Overnight $6 and up.
- First quality New, Brand Name products
- P.O.'s accepted upon approval
- All major credit cards accepted with no surcharge.
- Credit card not charged until order is shipped
- Orders received before 7:30 pm Eastern time weekdays shipped same day
- We export to most countries in the world
- All returns require approval and are subject to a restocking fee
- Prices subject to change
- Open 7 am to 6 pm M-F. 9 am to 4 pm Saturdays

300 120th Avenue NE, Bldg 1, Suite 120, Bellevue, WA 98005, (206) 454-7258

1 - 800 - 848 - 8967

THE LLB COMPANY, INC.

Macworld SHOPPER®

# MAC Xtra! Delivering The Knockout Punch On High Prices!

## POW! MEMORY UPGRADES

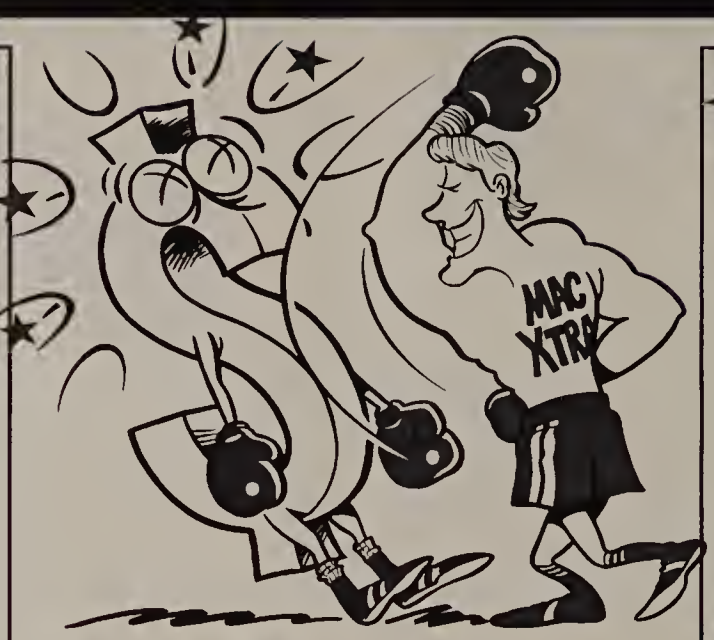
1x8x80 ..... $40
2x8x80 ..... $77
4x8x80 ..... $145
4x8x80 II/IIx ..... $155
16x8x70 (Low Profile) ..... $619
1x8x80fx ..... $42
4x8x80fx ..... $155
16x8x80fx ..... $629
4MB 72 pin (70NS/60NS) ..... $145/$145
8MB 72 pin (70NS/60NS) ..... $293/$300
16MB 72 pin (70NS/60NS) ..... $612/$612
32MB 72 pin (60NS) ..... $1,212
Newton-2MB ..... $289

## POP! POWERBOOK MEMORY

PB 100-6MB ..... $265
PB 140/170-4MB/6MB ..... $145/$222
PB 160/180-4MB/6MB ..... $147/$215
PB 160/180-8MB/10MB ..... $289/$355
PB 165C/180C-4MB/6MB ..... $152/$229
PB 165C-8MB/10MB ..... $317/$382
PBDUO 210/230-4MB/6MB ..... $165/$199
PBDUO 210/230-8MB/12MB ..... $298/$515
PBDUO 210/230-14MB/20MB ..... $592/$930
PBDUO 210/230-28MB ..... $1,429

## WHAM! MODEMS

Supra 5014LC 14.4 S/R Fax ..... $159
Supra 2400 ..... $59
SupraV.32bis Powerbook Fax ..... $229
Supra 14.4 S/R Fax
(w/cable/software) ..... $225
Zoom AMX 2400 bps ..... $68
Zoom FXV 2400/9600 S/R Fax ..... $129
ZoomVFXV 14.4 v.32bis S/R ..... $175




## SOK! ACCELERATORS

*DAYSTAR Universal Powercache*
030 33/33 w/FPU ..... $289/$379
030 50/50 w/FPU ..... $439/$565
Turbo 040 33 w/cache ..... $829
Turbo 040 40 w/cache ..... $999
128K Cache for Turbo 040 Accelerators ..... $172

## POW! DRIVES

Rumi 1.2 Ext/Rumi 1.2 Int ..... $1,109/$1,089
Rumi 170 Ext/Rumi 170 Int ..... $299/$219
Rumi 85 Ext/Rumi 85 Int ..... $279/$209
Rumi 240 Ext/Rumi 240 Int ..... $335/$279
Rumi 525 Ext/Rumi 525 Int ..... $679/$609
Rumi CD-ROM ..... $299
Rumi Optical 128 MB w/5 cartridges ..... $995
Rumi 44MB SyQuest w/cartridge ..... $289
Rumi 88MB SyQuest w/cartridge ..... $439
Rumi 105MB/C SyQuest w/cartridge ..... $429
Rumi 270MB SyQuest w/cartridge ..... $579
Rumi 8GB DAT Drive ..... $1209

## POW! MISCELLANEOUS

256K / 512K VRAM ..... $20/$38
Tool Kit (Simms Inst. Kit) ..... $7
PowerBook Tool Kit ..... $6.50
SIMMdoubler/SIMMchanger ..... $137/$98
LC/ LC II FPU ..... $55
LC III FPU ..... $65
Classic II FPU/Color Classic FPU ..... $55/$48
Duo Dock/Performa 600 FPU ..... $59
Centris FPU ..... $315
TI Microlaser Upgrade ..... $54
HP 4MB/HP 8MB ..... $175/$339

## POP! SYQUEST CARTRIDGES

SyQuest 44MB Cartridge ..... $59
SyQuest 44MB Preformatted ..... $64
SyQuest 88MB Cartridge ..... $69
SyQuest 88MB Preformatted ..... $75
SyQuest 105MB Cartridge ..... $62

## SOK! MEDIA

*Optical Cartridges*
128 MB (Verbatim) ..... $32
650 MB (Verbatim) ..... $85
1.2GB/512K (Verbatim) ..... $112
1.3GB/1024K (Verbatim) ..... $112
*Bernoulli Cartridges*
44 MB ..... $97
90 MB ..... $105
150 MB (5 Pack) ..... $459

## WHAM! SHIPPING

Overnight Delivery ..... $7
UPS ..... $6
Phone: ..... (206) 455-0786
Fax: ..... (206) 455-3448
*International Orders–24 Hours a Day*

**MAC Xtra**
1075 Bellevue Way N.E. Suite 114,
Bellevue, WA 98004
Phone: (206) 455-0786
Fax: (206) 455-3448

**We accept MasterCard, VISA & Discover •**
Returns subject to approval and restocking fee•
Prices subject to change
7:00 AM to 6:00 PM M-F 9:00 AM to 4:00 PM Sat. PST

**CALL: 1-800-553-4230**

CIRCLE 561 ON READER SERVICE CARD

# YOUR MEMORY GUIDE

## POWER PC

8meg Kit ..... **$309**
16meg Kit ..... **$634**
32Meg Kit..... **$1279**
64meg Kit ..... **$2598**

## 30 PIN SIMMs

| | | | |
|---|---|---|---|
| 1x8 - 100 | **$39** | 4x8 - 80 | **$147** |
| 1x8 - 80 | **$42** | 4x8 - 70 | **$154** |
| 1x8 - 70 | **$45** | 8x8 - 80 | **$365** |
| 2x8 - 80 | **$76** | 16x8-70 | **$589** |
| 2x8 - 70 | **$79** | 16x8-70nc | **$609** |

## 72 PIN SIMMs

1x3270 (4meg) **$149**
2x3270 (8meg) **$295**
4x3270 (16meg) **$585**
4x3260 (16meg) **$609**
8x3270 (32meg) **$1299**

## POWERBOOK

| | 140/170 | 160/180 | 165c/180c | Duos |
|---|---|---|---|---|
| 4mb | **159** | **169** | **165** | **195** |
| 6mb | **219** | **239** | **239** | **219** |
| 8mb | —— | **299** | **309** | **329** |
| 10mb | —— | **385** | **389** | |

## HARD DRIVES

| **QUANTUM** 2 year Warr. | | **INT/EXT** |
|---|---|---|
| LPS170mb | 3.5" | **$245/293** |
| LPS270mb | 3.5" | **$298/369** |
| LPS340 | 3.5" | **$349/399** |
| PRO540mb | 3.5" | **$648/698** |
| PRO1050mb | 3.5" | **$979/1029** |
| PRO1225mb | 3.5" | **$1085/1139** |
| **QUANTUM GO DRIVES** | | **INT/EXT** |
| 127mb | 2.5" | **$269/359** |
| 170mb | 2.5" | **$289/379** |
| 256mb | 2.5" | **$379/465** |
| **FUJITSU** 5 Year Warr. | | **INT/EXT** |
| 520mb | 3.5" | **$589/649** |
| 1.2Gig | 4.5" | **$849/899** |
| 2.4Gig | 5.25" | **$1789/1889** |

**EXTERNAL DRIVE HOUSINGS**
Complete with SCSI ond power coble.
Holf Height Mini **$89**

## *BLACKBIRD*

For PowerBook 520, 520c, 540, 540c

| | | |
|---|---|---|
| 4mb | ***NEW!*** | **$279** |
| 8mb | ***NEW!*** | **$479** |
| 16mb | ***NEW!*** | **$839** |
| 32mb | ***NEW!*** | **$1599** |

## DAYSTAR DIGITAL

**POWER PC**
66 MHz PawerPro 601 **$1499**
80 MHz PowerPro 601 **$1999**

**POWERCACHE** **w/oFPU/FPU**
33MHz PowerCoche **$275/359**
50MHz PowerCoche **$415/539**
Pawer Coche Adopter* **$99**
Na adapter required for Mac CI, VI, VX, Performa 600

**TURBO 040**
33MHz Turba 040 **$629/799**
40MHz Turbo 040 **-----/959**
Fostcoche Turbo **$169**
(128 cache for Turbo 040 family)

**APPLICATION ACCELERATORS**
Image 040 **$1549**
Quad 040 **$959**
Chorger **$498**
Chorger Plus **$639**
Chorger PFS **$1819**

**SUPERMAC BLOWOUT !!!**
**CALL FOR SPECIAL PRICING ON ALL VIDEO CARDS, WHILE THEY LAST, HURRY !!!**

## SYQUEST

| **DRIVES** | **INT/EXT** |
|---|---|
| Memory Direct 44 | **$249/289** |
| Memory Direct 88c | **$379/419** |
| Memary Direct 200 | **$559/599** |
| Memory Direct 105 | **$339/379** |
| Memory Direct 270 | **$619/659** |
| 44mb SyQuest Cort. | **$62** |
| 44mb lomega Cart. | **$56** |
| 88mb SyQuest Cart. | **$94** |
| 88mb lamega Cart. | **$80** |

## MODEMS

Global Village Power Port
Bronze **$95**
Silver **$259**
Gold **$279**
Globol Village Tele Port
Bronze **$119**
Silver **$279**
Gold **$298**
**New !!**
Globol Village Power Port Mercury for PB 540, and 540c **$589**
Global Village Mercury **$339**
One World Fax Server
1 Line/Apple Talk **$879**
2 line/ 10BT **$1299**

Same Day Shipping
Educational, Corporate and Government P.O.'s Welcome.
We accept AMEX, VISA, MASTERCARD & DISCOVER

7921 Professional Circle
Huntington Beach, CA 92648
FAX 714-842-9437
7am - 6pm Monday - Friday P.S.T.
Lifetime Warranty on all memory products. Prices subject to change without prior notice.

**800-989-6348** **714-848-5958**

# MEMORY DIRECT!

Terms & Conditions: RMA numbers are required for all returns. All unopened, refused, cancelled or non-defective returns will be subject to a 15% restocking charge.

# CA$H IN YOUR USED MEMORY

**We buy 256k, 512k, 1mb, 2mb, 4mb, 8mb, & 16mb Memory SIMMs. Also VRAM & Laptop Memory**

**714-842-1227**

# GREEN MEMORY

CIRCLE 516 ON READER SERVICE CARD

## Dynamic Engineering

PowerBook & Duo **Accelerators**

16 -> 33, 25 -> 33, 33 -> 40 MHz

**MacPortable** Memory, HDD, Batteries

Mac & PC Systems & Accessories

**PowerBook 100 Batteries $89**

**HP** Printers & FAX

435 Park Dr., Ben Lomond, Ca. 95005 (P)408-336-8891 (F)408-336-3840

VISA MC P.O.

**(408) 336-8891**

CIRCLE 411 ON READER SERVICE CARD

## TAKE YOUR MAC TO THE MAX®

*THE BIGGEST SPEED INCREASE FOR YOUR MONEY.*
*As seen in MacWorld, March 94.*

| | Self Installable Kit | Installed |
|---|---|---|
| MAX® IISi | $29* | $89 |
| MAX® QUAD 700, 900, 950 | $99* | $159 |
| MAX™ 040 | $99 | $159 |
| MAX™ POWER PC | $139 | $199 |

* Some soldering required

**MACEXPERTS**™ INC
AFFORDABLE UPGRADE SOLUTIONS
1511 LINCOLN BLVD, SANTA MONICA, CA 90401

**1(800) 392-1234**
(310) 394-1223 FAX (310) 394-7323

CIRCLE 556 ON READER SERVICE CARD

## WANTED: USED SIMMS

**TOP $$$ PAID**

*(Dealers welcome)*

256K-512K-1MB-2MB PB

**(310)459-4591**

FAX (310) 454-8474

CIRCLE 410 ON READER SERVICE CARD

**Attn: IIfx and IIci Owners**

Accelerate your Mac IIfx and IIci with Fusion Data's TOKAMAC accelerators. • 20-50% faster than a Quadra 950. • Buy at super low factory direct prices • 30 day MBG • Lifetime warranty • Toll Free tech support • 1992 MacUser Editor's Choice "Best accelerator of the year!"

*Fusion Data Systems TokaMac*
*8920 Business Park Drive*
*Austin, TX 78759*
***(800) 285-8313***
***(512) 338-5326***
***(512) 338-1276 FAX***

## MEMORY TRADERS

## WE BUY USED MEMORY

ANY QUANTITY - ANY SPEED

256K
512K
1MB
2MB
8MB
4MB
16MB

30 PIN OR 72 PIN

POWERBOOK 2MB-10MB
VRAM
IIFX SIMMS

CHEAPER THAN "DOUBLING"
TRADE IN FOR NEW SIMMS

7215 Arlington Road, Suite 202
Bethesda, MD 20814
800-315-7807 301-215-7807
FAX 301-907-7542

WE BUY PC/WORKSTATION/ MINICOMPUTER MEMORY

CIRCLE 409 ON READER SERVICE CARD

## DataCarts for Syquest Drives

Lifetime Warranty

Money Back Guarantee

*Special Offer*

DataCart 45
1 Pack ..... $58.
5 Pack ..... $55.

DataCart 88
1 Pack ..... $89.
5 Pack ..... $86.

**Komag Optical Disks**

128MB ..... $28.
600MB ..... $85.
1GB ..... $99.

***Memory Merchants***
Quality Removable Storage
**(800) 799-DISK**
(3475)
4 Shratton Ave., San Carlos, CA

CIRCLE 539 ON READER SERVICE CARD

## ACCELERATORS/FPUs

GIVE YOUR CENTRIS 610 A 40 MHz BOOSTER SHOT!

$299

| | INT/FPU |
|---|---|
| 40MHz 040 **Centris 610** | $299/$399 |
| Mobius Speedster 25MHz | $399/$499 |
| 33MHz w/128K cache | $549/$649 |
| 25MHz 030 **Mac SE** | $129/$178 |
| 25MHz 020/FPU/16K cache **LC** | $99 |
| 25MHz 030/FPU/16K cache **LCII** | $129 |
| 33MHz 030 **Mac II, IIx, SE/30** | $188 |
| Apple Cache Card **Mac IIci** | $49 |
| Cache Card 256K **PowerMac** | $269 |
| 68040 FPU **Q605,LC475,C610** (*with 68LC040 trade-in) | $249* |
| 68882 **FPU LC I-III, Duo**, etc. | $39-49 |
| 68851 PMMU w/Mode32 **Mac II** | $99 |
| 32-bit **SIMMs** 70ns 4/8MB | $149/299 |

SONNET TECHNOLOGIES Since 1986
18004 Sky Park Circle, Irvine CA 92714
**714-261-2800**
*Visa/MC No Surcharge; Gov't./Corp./Educ. P.O.*
*One year min. warranty on all products.*

## SOURCE INTERNATIONAL

*Silicon Valley's*
*FIRST CHOICE for Computer Memory*

***(415) 323-6059***
***Fax (415) 326-3552***

CIRCLE 592 ON READER SERVICE CARD

## DBI MEMORY

MAC SIMMS: 1MB-32MB
QUADRA
POWER PC
VIDEO UPGRADES
POWERBOOKS/DUOS
NEWTON CARDS
•KINGSTON MEMORY•
NOBODY BEATS OUR PRICES!!

**1-800-368-7995**
203-481-0750 FAX 203-481-6385

WE BUY EXCESS INVENTORY

CIRCLE 557 ON READER SERVICE CARD

## LIMITED ADVERTISING BUDGET?

Macworld Shopper offers a great way to reach 550,000 active shoppers.

Macworld SHOPPER

# Batteries • • • Chargers • • • Accessories

for Macintosh PowerBooks™ & Duo™

**PowerBook Products:**

| | |
|---|---|
| SlimPack for Powerbook(MC-180S) | $169.95 |
| PowerGage Battery (MC-180) | $ 89.95 |
| High Capacity Battery (MC-170) | $ 69.95 |
| PowerCharger Plus (MC-SC100) | $149.95 |
| PowerCharger(MC-CHR) | $129.95 |
| Automobile Power Adapter (MC-AP100) | $ 99.95 |
| Swapper for PowerBook (MC-SWP1) | $ 14.99 |
| Starter-Kit (MC-KIT) | $149.95 |
| Power-Kit (MC-K02) | $199.95 |

**Other Products:**

| | |
|---|---|
| SlimPack for Duo (MC-200S) | $299.95 |
| RapidCharger for Duo (MC-SC200) | $149.95 |
| Automobile Power Adapter for Duo (MC-AP200) | $ 69.95 |
| X-Pack Extended Battery with leather Case (NT-K01) | $119.95 |

* Dealers: Products available through Ingram *

3Ti® Battery Technology, Inc.

5700 Bandini Boulevard, Commerce, California 90040
Tel: (213) 728-7874 • (800) 982-8284 • Fax: (213) 728-7996

CIRCLE 509 ON READER SERVICE CARD

Simply the best program available for updating files between multiple Macs and disks!

MacWorld Special Offer $49.00 (expires 8/15/94)

Leader Technologies
Tel 714-757-1787
800-828-0883
Fax 714-757-1777

CIRCLE 558 ON READER SERVICE CARD

Pack your Powerbook in seconds!

1236 N.W. Flanders, Portland, OR 97209
(503) 248-0053 FAX (503) 274-7685
CALL TOLL FREE! 1-800-548-0053
(9-5 Pacific Time)

CIRCLE 444 ON READER SERVICE CARD

TeleFinder™ Bulletin Board System
GROUP EDITION BBS

The leading Macintosh BBS for business and education. First in quality and performance.

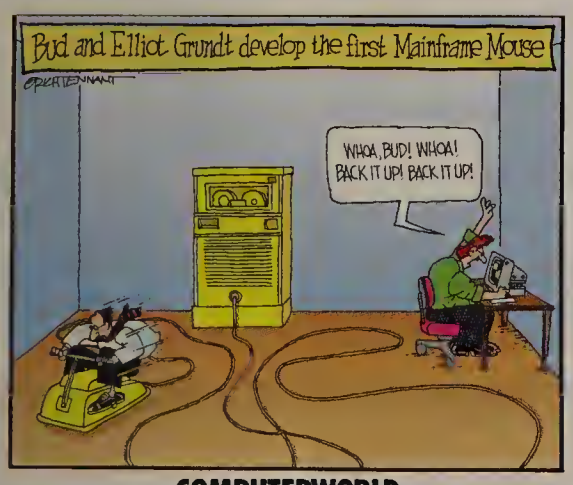
- "The best BBS available on any platform, at any price." - *MacUser (UK)*.
- "Best Communications Software 1992" - *MacWorld Australia.*
- Multi-user chat, E-mail, ZMODEM file transfer, conferences, find file, and graphic user interface.
- Supports Mac and PC users.
- TeleFinder is $425 for unlimited users, includes host and user communication software.

*Call for free eval disk!*

Spider Island Software
4790 Irvine Blvd #105-347 Irvine, CA 92720
tel (714)669-9260 fax (714)669-1383
bbs (714)730-5785

CIRCLE 597 ON READER SERVICE CARD

# COMPUTERWORLD's "5th Wave" Cartoon Mouse Pad




COMPUTERWORLD

**COMPUTERWORLD** brings humor to a mouse pad featuring a cartoon from "The 5th Wave" series by Rich Tennant. Not available in stores, this colorful foam-backed pad will keep your mouse clean and protect your desktop. Best of all, it's only $4.99*. Send your name, address and check or money order to **COMPUTERWORLD**, P.O.Box 9171, Framingham, MA 01701, Attn: Product Fulfillment. For credit card orders, call 1-800-343-6474.

*In U.S., for each unit ordered, add $1.25 for postage and handling; orders outside U.S. add $2.50 each. Residents of MA, CA, GA, NJ, and DC add applicable sales tax. Canada residents add G.S.T. C3MW3

SUPER MAT™ ...the new comfort edge

The Best Way To Reduce Computer Noises and Vibrations

High-tech Super Mat dampens annoying noises and damaging vibrations, to create a safer, more pleasant workspace. Model for PowerMac, Quadra, Centris, Performa, LC and II Series.

**Plus Super Mat:**

- Protects CD-ROM & Hard Disks from vibration induced crashes and data loss
- Protects your desk from scuffs & scratches
- Fits neatly under most office equipment

**Only $19.95**

60-Day Money-back Guarantee

Add $4.75 Shipping/Handling, Cal. res. add 8.25% tax.

CALL 1-800-88-INOVA

Accept VISA MasterCard 24 hr

Call or send check or M/O to "INOVA Tec"
1933 Davis St., Ste. 289, San Leandro, CA 94577

CIRCLE 581 ON READER SERVICE CARD

DUPLICATION FROM $.49
HIGHEST QUALITY MEDIA

From $.49 (5.25") and $.80 (3.5D")

- All Diskette Formats
- Custom Labels
- Diskette Mailers / Accessories
- Assembly Services
- Generous Volume Discounts

FORMATTED DISKETTES

| QTY 250 | SONY VERBATIM | OEM GENERIC |
|---|---|---|
| 3.50" DD | $.47 | $.45 |
| 3.50" HD | $.57 | $.53 |

- 10% Discount on First Order
- DDS, Macintosh, or Custom Formats
- Colored Media add $.05
- Private labeling / Volume Discounts

800-255-3142
Diversified Systems Group, Inc.
P.O. Box 1114, Issaquah, WA 98027

CIRCLE 496 ON READER SERVICE CARD

PROTECT YOUR MAC

Finest Quality, Custom-Fit!

8 Color Choices!

ALL FABRIC

- Heat Ventilating, will not shrink or deteriorate with age! • Machine Wash & Dry! • All makes & models!
- Custom orders! • Tan, Navy, Royal Red, Maroon, Gray, Brown or Black
- 100% Satisfaction Guaranteed!
- Outstanding service since 1983!
- Found a lower price? Call us!!

Choose Monogramming or Heat Transfer of your Favorite Photo

| | | | |
|---|---|---|---|
| 11-30 Classic/II & Kybd (2pc) | $24.95 | 11-99 Adj Kybd & Kypd (2pc) | $11.95 |
| 11-94 Color Classic & Kybd | 24.95 | 10-86 Mac Extended Kybd | 9.95 |
| 11-84 LC, Mac14" & Kybd(2pc) | 29.95 | 11-80 Mac 14" Color Display | 19.95 |
| 11-95 Centris610,14"&Kyb(2pc) | 29.95 | 11-74 Mac 16" Color Display | 24.95 |
| 11-96 Centris 610 CPU Only | 15.95 | 10-37 Imagewriter II | 15.95 |
| 11-77 Centris650,14"&Kyb(2pc) | 29.95 | 11-93 LaserWriter Pro 600 | 19.95 |
| 11-79 IIvx/Centris 650 CPU | 15.95 | 11-98 LaserWriter Select 300 | 24.95 |
| 11-97 Quadra 800 CPU | 15.95 | 10-90 LaserWriter II | 24.95 |
| 11-59 Quadra 900/950 CPU | 19.95 | 11-25 Personal LaserWriter | 24.95 |
| 12-05 Quadra 840AV CPU | 15.95 | 11-52 StyleWriter | 15.95 |
| 12-06 DuoDock,14"&Kyb(2pc) | 29.95 | 11-91 StyleWriter II | 15.95 |
| NEW! PowerBook Pouch | 19.95 | 91-22 H-P DeskWriter/550 | 19.95 |
| ???? Don't see listed here?? | CALL | SKIN Apple Keyboard Skins | 15.95 |

Add $4.00 Shipping & Handling (Check, MO, COD, VISA/MC) Specify Kybd

CO-DU-CO Computer Dust Covers
4802 W. Wisconsin Ave., Dept. MW, Milwaukee, WI 53208
800-735-1584 414-476-1584 • 476-9329 FAX

CIRCLE 455 ON READER SERVICE CARD

# MUSIC FOR EVERYONE!

Both programs compatible with MIDI but MIDI is not required.

**SONGWORKS**

NEW! Your songwriting partner automatically notates your melody, suggests chords, suggests endless tune ideas, aligns lyrics, plays, transposes, prints. $125.00

**PRACTICA MUSICA**

Your personal music tutor. Provides ear training and music theory from beginning to advanced. Includes textbook. $125.00

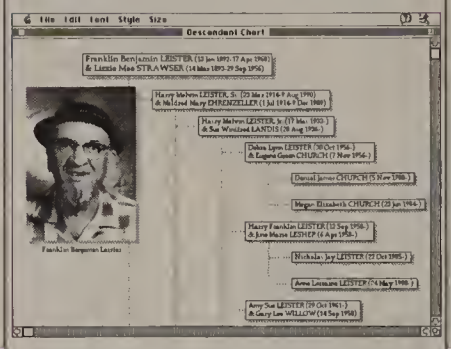
ARS NOVA • 1-800-445-4866, FAX 1-206-889-0359 • Box 637, KIRKLAND, WA 98083

CIRCLE 595 ON READER SERVICE CARD

# REUNION®

the family tree software

*"Features a well-thought-out and intuitive interface."* 4½ *MacUser* Oct '90



Reunion quickly records and organizes your family information and images, creates large graphic tree charts, family group records, indexes, calendars, family histories, mailing lists, questionnaires, links and displays color pictures, shows how you're related to others, provides custom fields to record information unique to your research, calculates the day of the week you were born and your life expectancy, imports and exports data, and much more. The highest rated by *MacUser*.

***To order, call MacConnection 1-800-334-4444.***

*For a free brochure and sample printouts, contact:* *Now available for Mac and Windows.*

Leister Productions
P.O. Box 289, Mechanicsburg, PA 17055
*Phone* 717-697-1378 *Fax* 717-697-4373
*CompuServe* 71201,1105 *America Online* LeisterPro

# BIBLE MASTER™

=NAS COMPUTER BIBLE

**Get them all together...**

King James Version

New International Version

New American Standard Bible

**...the best selling translations!**

**...add on module**

NAS Hebrew/Greek Dictionaries

...Just the fastest, finest, easiest to use, most powerful Bible software around...

**American Bible Sales**
870 S. Anaheim Blvd.
Anaheim, CA 92805
1-800-535-5131

**DISCOUNT SOFTWARE PRICES**

CIRCLE 537 ON READER SERVICE CARD

**Family Roots™**
**Genealogy.** Do it YOUR way! Huge variety and capacity for your family history. Make pedigree charts, descendants charts, person sheets, group sheets, indexes and much more. Customize to your own preferences. Standard Mac interface. Call for FREE information. Satisfaction guaranteed. MC/Visa/AE.
*Quinsept*
*Box 216*
*Lexington MA 02173*
***617/641-2930***
***800/637-ROOT***

**Family Heritage File™**
**Genealogy.** New Version 3.3! Most powerful and easy genealogy program on Mac. Rated "BEST" by Macworld. Designed by genealogy professionals. • Stand alone • Graphic Pedigree, Descendants, Family Group, Individual, Marriage, Surname • Unlimited History • Sorted Lists • Export to WP/data base/ modem • GEDCOM compatible • Jewish/LDS features. $149 + 5 s/h. Ask about Family Heritage Bundle. Visa/MC. Demo $7. Free Lit Pak.
*Star•Com Microsystems*
*Windsor Park East*
*25 West 1480 N., Orem, UT 84057*
***801/225-1480***

# Music For The Mac

*The full scale of Products*

❑ From instructional music software, like our own Compose Yourself; to the intricacies of Hard Disk recording.

❑ Authorized dealer for Coda, Digidesign, E-MU, Mark of the Unicorn, Opcode, Panasonic, Ramsa, Roland, Steinberg-Jones *and more.*

Expert advice before you buy, and full tech support after you purchase!

MacBEAT™
1314 Rufina Circle A4
Santa Fe NM 87501

Call the Experts at:
**1-800-MAC-BEAT** or
505-473-4929 fax: 505-473-4647
***Free Catalog Available!***

CIRCLE 572 ON READER SERVICE CARD

# Software Discounts Up to 80%!

*Full Packages* **(Students-Teachers-Schools)** *Latest Ver.*

| | | | | | |
|---|---|---|---|---|---|
| **PageMaker 5.0** | **$299** | | **Photoshop 2.5.1** | **$269** | |
| **AutoCAD Rel.12** | **$199** | | **Illustrator 5.5** | **$199** | |
| Microsoft Word 5.1 | $129 | Director 4.0 | $598 | FrameMaker 4.0 | $249 |
| WordPerfect 3.0 | 129 | Premiere 3.0 | 249 | Coda Finale 3.01 | 250 |
| Microsoft Excel 4.0 | 149 | Claris Works | 149 | Freehand 4.0 | 249 |
| Fractal Painter 2.0 | 199 | FileMaker Pro | 149 | Morph 2.0 | 139 |
| Statistica/Mac | 695 | Swivel 3D Pro | 349 | Authorware 2.0.1 | 995 |
| Strata Studio Pro 1.0 | 495 | SoftWindows 1.0 | 249 | MiniCAD+4 | 250 |

Much much more.....Call for other titles....P.O. from schools are welcome!

VISA **Orders (800) 377-9943** MasterCard

Software Plus Academic Inc.
50 E. Palisade Ave. #200, Englewood, NJ 07631 Info/Cat. (201) 569-6262

CIRCLE 538 ON READER SERVICE CARD

# COMPUTER GRAPHICS

- Animation
- Desktop Publishing
- Photo Retouching
- Computer Illustration

1-800-225-9023

INTERNATIONAL FINE ARTS COLLEGE
1737 N. Bayshore Dr., Miami, Florida 33132
or Fax your inquiry to: (305) 374-5933
Classes start Jan. & Sept.

Name
Address
City State Zip
Phone ( )
Yr of HS Graduation Age

CIRCLE 565 ON READER SERVICE CARD

# Graphic Astrology

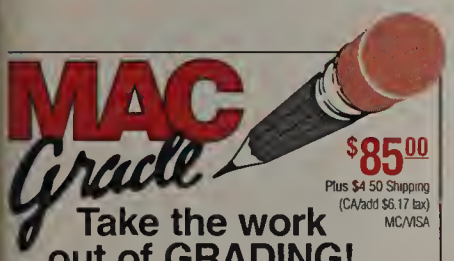
Professional quality software for all your astrological needs. Charting programs Interpreters, atlases fonts! State-of-the-art features, high-resolution output, superior accuracy

FOR ASTROLOGERS AND STUDENTS OF ASTROLOGY

*Call or write for FREE catalog!*

**Time Cycles Research**
27 Dimmock Rd Waterford CT 06385
(203) 444-6641 • Fax (203) 442-0625

**Bible Book Store On Disk**
Full Featured, Fast and Friendly Bible Study software. As the leader in Bible Study software since 1981 we have continued to listen to our customers and provide them with the tools they need. We offer the most comprehensive line of Bible study tools available.
Call for FREE catalog.
*Bible Research Systems*
*2013 Wells Branch Pkwy #304*
*Austin, TX 78728*
***800/423-1228***
***512/251-7541***




**Take the work out of GRADING!**
Save time and energy with MacGrade, the powerful grade manager that's fast, fun and exceptionally easy to use. Great reports and graphs. **New!** Version 2.2 has separate elementary and secondary/college editions.
**Call (800) 795-0641**
CalEd Software
P.O. Box 22913, Carmel, CA 93922
*60 Day Unconditional Money Back Guarantee.*

CIRCLE 406 ON READER SERVICE CARD

# Claire
The Personal Music Coach

Music Education Software that Listens to You!

*"Claire could forever change the way musicianship is taught."*

MACWORLD MW★★★★

**$129.95 Order Direct**
**1-800-557-2633 Ext531**

**OPCODE**
3950 Fabian Way Suite 100
Palo Alto, CA 94303

CIRCLE 501 ON READER SERVICE CARD

# STUDENT-TEACHER-SCHOOL DISCOUNTS!

***LATEST VERSIONS & FULL PACKAGES***

★ QUARK XPRESS V3.3 $299
PAGEMAKER V5.0 $249 ★

| | | | |
|---|---|---|---|
| 4TH DIMENSION 3.1 | $499 | MINICAD + 5 | $295 |
| ASTOUND 1.0 | $175 | MORPH 2.0 | $125 |
| AUTOCAD R12 W/AME | $249 | MS EXCEL 4.0 | $159 |
| CANVAS 3.5 | $175 | MS OFFICE | $269 |
| CLARIS WORKS 2.1 | $145 | MS WORD 5.1 | $125 |
| CODA FINALE 3.01 | $249 | M.Y.O.B. W/ PAYROLL | $80 |
| DIRECTOR 4.0 | $595 | NOW UTILITIES 4.0.1 | $79 |
| ENCORE 3.0 | $299 | PERSUASION 3.0 | $169 |
| FILEMAKER PRO 2.1 | $169 | PIXAR TYPESTRY 2.0 | $135 |
| FRAMEMAKER 4.0 | $239 | QUICKEYS 3.0 | $79 |
| FRACTAL PAINTER 2.0 | $179 | RADIUS ICD 20" MONITOR | $2099 |
| FREEHAND 4.0 | $195 | RAY DRM DESIGNER 3.0 | $185 |
| KAI'S POWER TOOLS 2 | $85 | SOFT WINDOWS 1.0 | $249 |
| LOTUS ORGANIZER 1.1 | $59 | STRATAVISION 3D 3.0 | $299 |
| MAC TOOLS 3.0 | $69 | STRATA STUDIO PRO | $595 |
| MACROMODEL 1.5 | $699 | SPANISH TRANSLAT. PRO | $499 |
| MATHCAD 3.1 | $169 | WORD PERFECT 3.0 | $125 |

MANY OTHER TITLES AVAILABLE!!

**PHONE (800)289-3275**

Call For FREE Catalog!!

VISA - MASTERCARD - AMEX - SCHOOL P.O.'S ACCEPTED!!

**Products also available by Adobe and Symantec.**

**THE SOFTWARE SOURCE CO, INC.**
**2517 Hwy 35, Bldg N, Suite 201, Manasquan NJ 08736**
**Phone (908) 528-0030 Fax (908) 528-9378**

CIRCLE 570 ON READER SERVICE CARD

**Bachelor Explorer**
New exploration tool for high school sophomores on up hoping to get a bachelor's degree. All majors (770+) and foreign lang. (100+) incl. Choose majors by career path, course title, subject area or any word(s). Choose schools (1750) by major, state, region, ethnic %'s, cost, size, religious affiliation, etc. Browse, search, select, list, sort and print. Macs w/hard drives needed. $59.95 (+ $3.00 postage).
*Insearch, PO Box 14337*
*Albuquerque, NM 87191*
***1-800-883-0123***

# LXR·TEST
**BEST IN TESTING**

Highest-rated software for every testing environment: classroom, school, district, governmental, industrial and certification.

- ✓Item Banking & Test Production
- ✓Test Scoring w/Group Comparison
- ✓Mastery Reporting & Remediation
- ✓Survey Scoring and Analysis
- ✓Interactive Testing with Movies
- ✓Weighted & Multi-Response Grading
- ✓Accomodates All Question Types
- ✓Integrated Design (Mac & Windows)

**Logic eXtension Resources**
909•980•0046 Fax: 987•8706
7168 Archibald Ave. Suite 240
Rancho Cucamonga, CA 91701

CIRCLE 407 ON READER SERVICE CARD

CIRCLE 594 ON READER SERVICE CARD

# "Marble 100"
**$69.95***

600 Quality Megabytes
Multimedia - 640x480
Pre-Press - 2400x3600
100 Backgrounds
CD

**1-310-671-2031**
Visa & M/C • *$4.50 S/H
Tudor House Publishing
824 W. Hyde Park Blvd. • Inglewood • CA 90302

CIRCLE 571 ON READER SERVICE CARD

CIRCLE 416 ON READER SERVICE CARD

# Pacific HiTech is serving you the Internet on a silver platter

Pacific HiTech has culled the finest nuggets from the Internet and placed them on high-volume, all-in-one CD-ROMs. Each one is an instantly accessible resource of tools, programs and information. There is something for everyone, from the programmer to the occasional weekend mouse jockey. These discs are a great value for people who value their time.

**$49.95 each**

$5.00 S/H (U.S.)
$9.00 S/H (Int'l)

- Games • Periodicals
- Fonts • Demos
- Graphics • Virus Checkers
- Communications
- Applications • Development
- Disk Utilities

- Classical Books
- Games
- Educational Stacks
- Organizational Stacks
- HyperCard® Tools

- Arcade
- Adventure
- Bolo
- Cards
- Word games

- Source Code
- Compilers
- Interpreters
- Tools
- Information

Pacific HiTech Inc.
4530 Fortuna Way
Salt Lake City, Utah 84124

PACIFIC HI-TECH
INCORPORATED

**1-800-765-8369**

Int'l 801-278-2042
Fax 801-278-2666
Internet: orders@pht.com AppleLink: pht

VISA

CIRCLE 414 ON READER SERVICE CARD

# CD-ROM COLLECTION *SPECIALS!*

ANY 3 Titles from Any Bundle $99.95
ANY 5 Titles from Any Bundle $129.95
**Take ALL 3 Bundles for $199.95**

**Bundle A, All 3 Titles for $99.95**

The New 1994 Version 6
Grolier Multimedia Encyclopedia $95.95
World Atlas $49.95
U.S. Atlas $49.95

**Bundle B, All 5 Titles for $99.95**

The View From Earth $29.95
Space Shuttle $29.95
Desert Storm $33.95
Capitol Hill $29.95
The Macintosh Product Registry $29.95

**Bundle C, All 6 Titles for $99.95**

The Animals $45.95
Ocean's Below $29.95
Word Tales $39.95
The Orchestra $65.95
Great Business Jokes $29.95
Funny $29.95

**Entertainment**

Myst $59.95
The 7th Guest $53.95
Just Grandma and Me $39.95
Fatty Bear Fun Pack $49.95
Dinosource $59.95
The Residents Freak Show $49.95
Games Collection $47.95
Small Blue Planet $59.95
Xplora 1 Peter Gabriel's Secret World $59.95

**Reference**

Mayo Clinic Health Book $49.95
Phonedisc USA Business & Residential $89.95
Street Atlas USA $99.95
The New Family Bible $39.95

For Apple Computers, Monitors, External CD-ROM Drives, Speakers, Headphones, Caddys and ALL Macintosh Accessories call 1-800- 858-4622

We accept ALL major Credit Cards

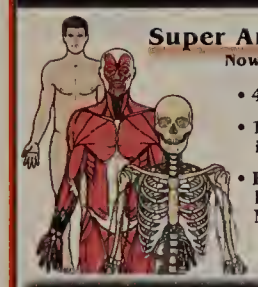
**CD-LINK 1-800-858-0311**

Call for ADULT Catalog
Phone (818) 785-2800 Fax (818) 785-3100
15500 Erwin St. #2002, Van Nuys, CA 91411

CIRCLE 430 ON READER SERVICE CARD

Super Anatomy Collections
"...technically and artistically superior."*

**LifeART™** Professional Medical Clip Art CD-ROM



Super Anatomy 1,2,3
Now Shipping!

- 400 New Images
- 100% Compatible in all Mac Software
- Editable in Illustrator and MacDraw Pro!

TechPool Studios
Cleveland, Ohio
Tel: 216-291-1922
Fax: 216-382-1915

FREE Catalog
800-LifeART
543-3278

*Medical Software Reviews

© 1994 TechPool Studios Inc. All rights reserved

CIRCLE 415 ON READER SERVICE CARD

**Logo Design Software**

Create logos like this in minutes; sell them for $75 - $500.

Logo SuperPower® is a large graphic database. You use one or more "design elements" and modify them to create world-class logos in minutes. There are **over 2,000 logo design elements** in the full package. Or, choose the basic package of 660+ elements. For the Mac: Requires FreeHand or Illustrator.

Logo SuperPower - basic
(660+ design elements).....$119
Logo SuperPower - full
(all 2,000+ design elements).....$279
To order, or for information, call
**(800) 648-5646**
Decathlon Corp. • 4100 Executive Park Dr.
Cincinnati, OH 45241
Phone (513) 421-1938

CIRCLE 533 ON READER SERVICE CARD

CIRCLE 564 ON READER SERVICE CARD

**AdArt**

ALSO AVAILABLE ON CD-ROM

Encapsulated Postscript Images

FEDERAL EXPRESS

REALTOR®

Recycled Art • Wedding
Real Estate Art • Astrology
Flags of the World • Mascots
Cars & Light Trucks • Animals
Logos & Trademarks, 1 - 12
Int'l Symbols & Icons, 1 & 2 • Women
Business Symbols • Medical Symbols
Safety & Packaging • Fraternal Symbols
Accents & Attention Getters • Transportation
Also: Special Edition Vinyl Cutters Packages

FAX 802 878-1768 • INFO: 802-879-1164
800 255-0562

Innovation Advertising & Design
41 Mansfield Ave • Essex Jct., VT 05452

CIRCLE 566 ON READER SERVICE CARD

**MAPArt™** MAPS FOR GRAPHIC DESIGN

*"Best Collection Map Category"*
Clip Art's Greatest Hits
MacWorld, January 1994

*"Fine Artwork"*
MacWorld 1992

World Maps
Continents
Major Countries with States & Provinces
US States with Interstates, State Highways, 3 Digit Zip Areas & Counties!

FULLY EDITABLE WITH ILLUSTRATOR, FREEHAND & OTHER PROGRAMS!

CARTESIA
5 S. Main St., Box 757
Lambertville, NJ 08530
Voice 609-397-1611
24 hr. FAX 609-397-5724

CALL FOR FREE CATALOG
800 334-4291

CIRCLE 417 ON READER SERVICE CARD

Sometimes Its Best To Sweat The Details And With A Graphic Translator Like CADMOVER... Its All Details!!

We couldn't call a release this big a 3.5. Kandu went into hyperdrive and didn't stop until CADMOVER 4.0 was ready to ship. We missed both our deadline and our release number, but took the time to create something really worthwhile for our customers.

The new CADMOVER is faster, plus:

- All New Editing Dialogs
- Task Specific Output Controls
- A Scripted Batch Processor
- Ångstroms to Astronomical Units Translation Accuracy
- New EPSF Readers For AutoCad v. 12, Gplot, & Pro Engineer (Vector)
- Five NewIntegrated Formats, ClarisCad, Wavefront (.OBJ) Presenter Professional, Envisage 3D, and MiniCad+ 4.0 Text.

KANDU
Software Corporation
703-532-0213

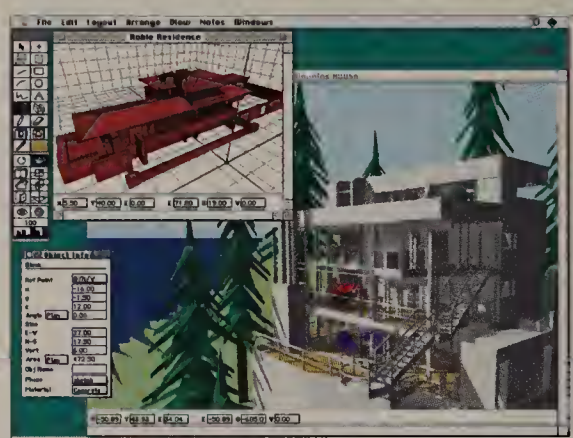
CIRCLE 477 ON READER SERVICE CARD

Precision Type FontSampler... 1.1

571 FONTS FROM 23 FOUNDRIES

Just off the press! Our new font catalogue (large format: 11"x 11") with lots of new releases. Free with any order. Or, get your copy for just $6.95 (includes free updates) – add $2.50 for S&H. Outside U.S. – Call for shipping charges. PRECISION TYPE: 47 Mall Drive, Commack New York, 11725. 5703. Fax: 516.543.5721. Phone: 516.864.0167 or 800.248.3668

CIRCLE 485 ON READER SERVICE CARD



A Design Breakthrough
...intuitive 3D modeling
PowerPC Native or 68-K

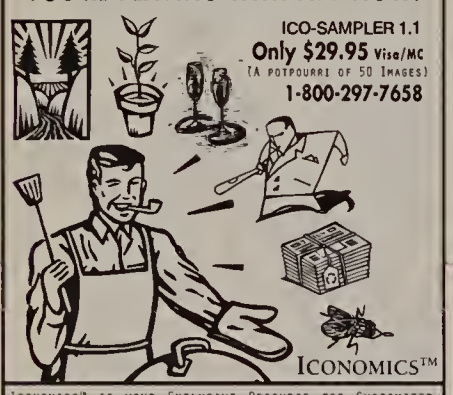
- easy, fast, intuitive 3D CAD
- 3D direct manipulation
- sketch in live 3D perspective
- object-based shadows
- fit, flip, snap to objects
- paste into openings
- sun studies, walkthroughs
- import/export DXF, PICT, etc.

DesignWorkshop™

Call Artifice: 503-345-7421
or fax: 503-346-3626
In Canada: 204-453-8111

CIRCLE 408 ON READER SERVICE CARD

PUT THE HOKEY CLIP ART IN THE BIRD CAGE, YOU'RE PLAYING WITH FIRE NOW.

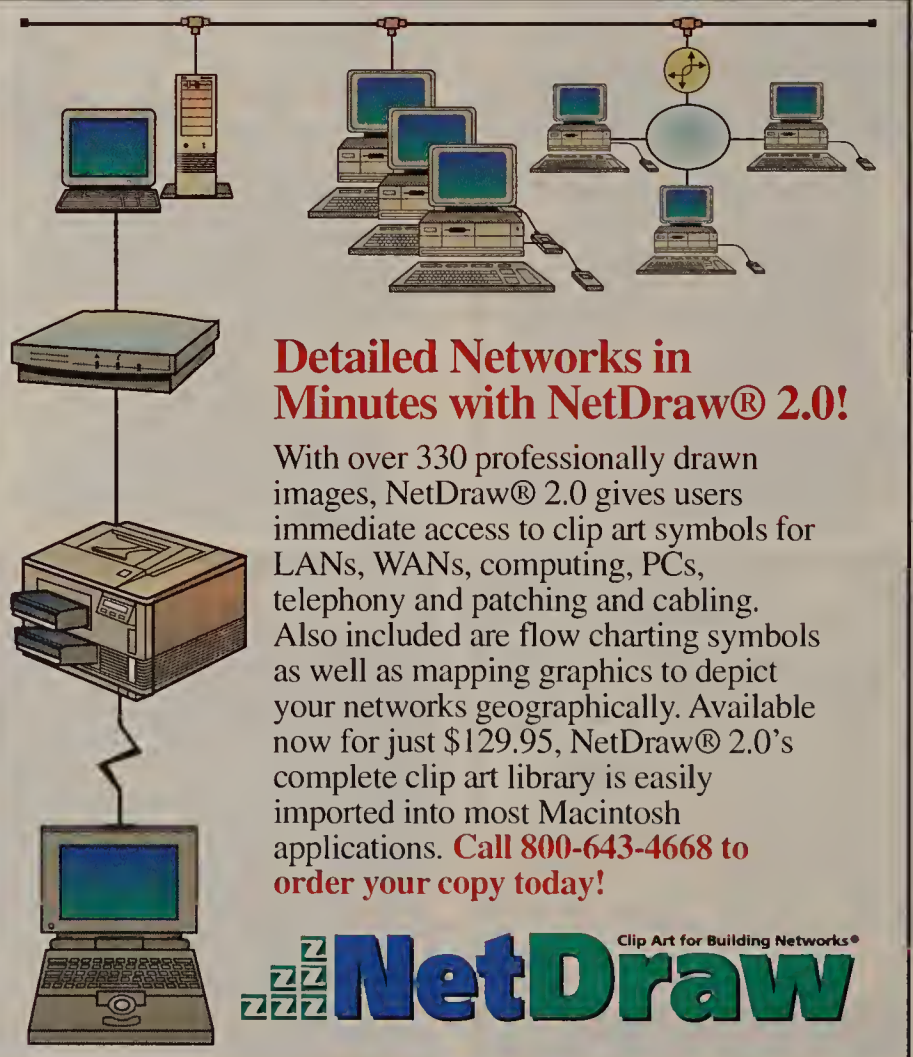


ICO-SAMPLER 1.1
Only $29.95 Visa/MC
(A POTPOURRI OF 50 IMAGES)
1-800-297-7658

ICONOMICS™

ICONOMICS™ IS YOUR EXCLUSIVE RESOURCE FOR CUSTOMIZED ICONS AND ILLUSTRATION. YOU PICK THE SUBJECT AND THE STYLE. WE DELIVER ON DISK OR BY MODEM. YOU ART DIRECT.

CIRCLE 546 ON READER SERVICE CARD



Detailed Networks in Minutes with NetDraw® 2.0!

With over 330 professionally drawn images, NetDraw® 2.0 gives users immediate access to clip art symbols for LANs, WANs, computing, PCs, telephony and patching and cabling. Also included are flow charting symbols as well as mapping graphics to depict your networks geographically. Available now for just $129.95, NetDraw® 2.0's complete clip art library is easily imported into most Macintosh applications. Call 800-643-4668 to order your copy today!

Clip Art for Building Networks®
NetDraw

CIRCLE 461 ON READER SERVICE CARD

OVER 1/2 MILLION ACTIVE BUYERS FIND WHAT THEY ARE LOOKING FOR IN THE MACWORLD SHOPPER SECTION.

Macworld SHOPPER

Unleash the power of MacArtist Magazine-- FREE!

In your complimentary issue, you'll discover powerful tips, tutorials, demos, reviews and exciting profiles of Macintosh experts. Information you can put to use today! Call or write for your FREE issue now!

NO COST. NO OBLIGATION.
1-800-954-4326
MacArtist Since 1989
8196 S.W. Hall Blvd. Ste-216, Beaverton OR 97005

CIRCLE 559 ON READER SERVICE CARD

ADOBE™

| New, Lower Prices | Adobe List | FF Price |
|---|---|---|
| | $275 | $187.50 |
| All Fonts Ship Same Day | $205 | $142.50 |
| | $145 | $96.50 |
| $3 Overnight Delivery | $105 | $72.50 |
| | $80 | $52.50 |

Call for Free Catalog
Fonts in a Flash™
(800) 435-1303
9:30-4:00 Central, M-F
No Surcharge

## FORTRAN on the Mac

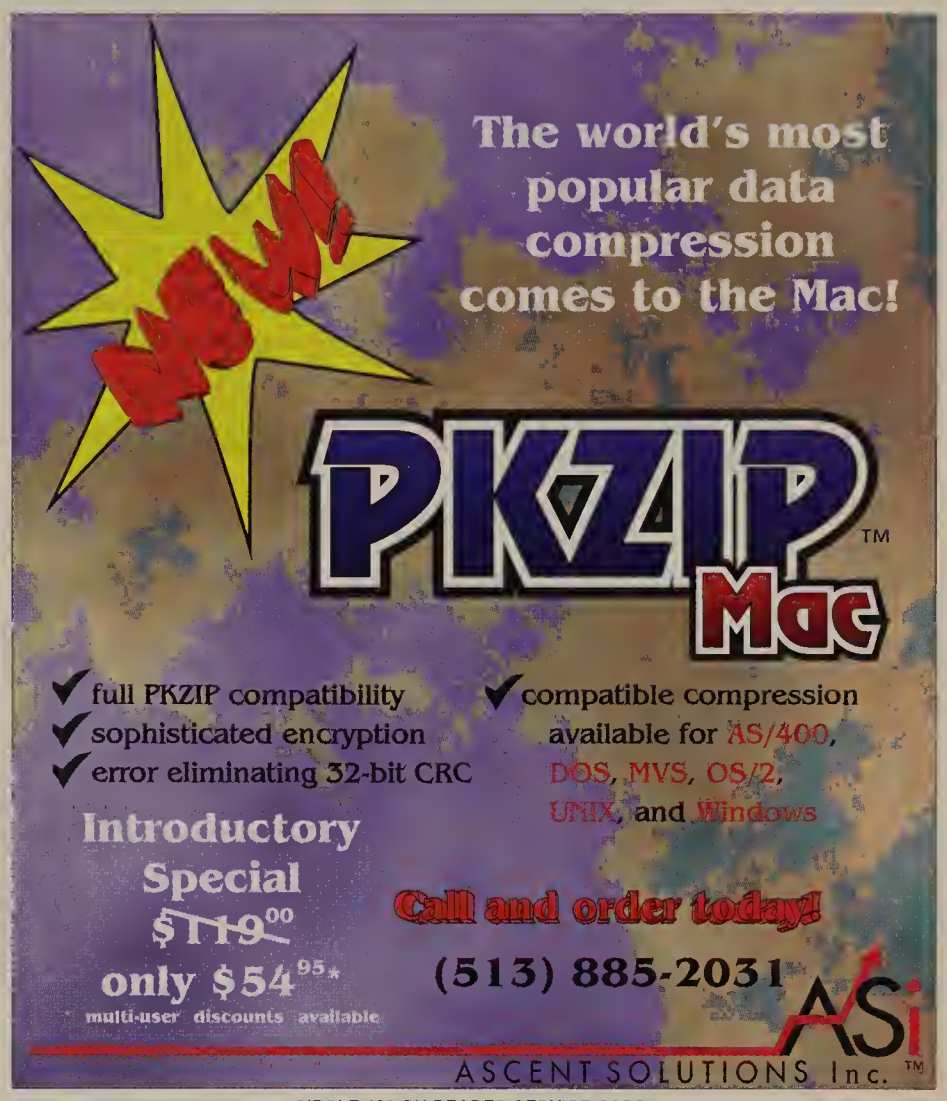
- ANSI standard FORTRAN 77
- VAX & Cray extensions
- Advanced debugging features
- Extensive code optimizations
- User-friendly Mac interface
- PowerMac & 68K available
- Background execution
- 2D & 3D graphics support
- C & Pascal compatibility
- Education discounts

**800-252-6479**

Language Systems Corp. • 100 Carpenter Dr. • Sterling, VA 20164
(703) 478-0181 • Fax: (703) 689-9593 AppleLink: LANGSYS

HOT SHOPPER PRODUCT CATEGORIES
**HELP BUYERS FIND THE PRODUCTS** THEY NEED FAST.

**MACTRAN PLUS Ver.4.5**
Sys 7 Comp INTEGRATED Made-for-Mac Devel System, Incl: Editor, Optimizing Compiler, Source level Debugger, Linker, Library Mngr, Profiler and Build Facility. Supports 68020/030/040 & 68881/2 native code. Significant Vax Fortran & ANSI 8x exts. High and Low Level tool box interface. Unltd Code seg size. *"I use it at home on my MAC II, on a Quadra in my Lab and on a Powerbook while traveling" Ole Vilman, Consultant Engineer.*
*DCM Data Products*
*1200 Quail St, #280*
*Newport Beach, CA 92660*
***714-724-0802/1021***
***714-724-0803 FAX***




CIRCLE 426 ON READER SERVICE CARD

**Care4th® PRO**
An ELECTRONIC MEDICAL RECORD SYSTEM and DATABASE with full printout support. Imagine your entire medical record shelf & much more in a lap or desktop Mac! Utilize clinical data in ways you could never have imagined. In 40 states and abroad, Care4th® Pro is the gold standard. Single & network versions available, starting well under $3000!
*Med4th Systems, Ltd.*
*716 East Carlisle Avenue*
*Milwaukee, WI 53217*
***414/963-1985 Voice and Fax***

**Medical Office Mgmt**
TessSystem 3™ is a complete system for insurance processing, patient billing, accts receivable, patient transactions, report generation & much more. Single/multi doctor, single/multiuser. Flexible & very easy to learn. Optional electronic claims. From $2,995. New practice discounts available. Call Today!
*Tess Data Systems, Inc.*
*14340 Torrey Chase Blvd, Ste 340*
*Houston, TX 77014-1021*
***800/218-TESS - Sales***
***713/440-9995, 713/440-6526 Fax***

James Heisig's **$49.99** ~~$89.99~~

## Remembering the Kana

***Learn Japanese hiragana and katakana in 6 hours.***

Available Soon for DOS

- Both the hiragana and the katakana presented in one package for **Mac**.
- Prints several types of flashcards and grid paper for review.
- Digitized sound lets you hear the pronunciation of each kana and all examples.
- On-screen flashcard review of the hiragana and katakana.
- Lessons automatically timed. On-screen help.
- Background information on the history and grammatical usage of the kana.
- Does NOT require KanjiTalk or the Japanese Language Kit.

Imagineer America Inc., 15317 NE 90th St., Redmond, WA 98052
Tel: **206 867 5790** Fax: **206 867 5792**

imagineer

CIRCLE 421 ON READER SERVICE CARD

**Native Application for Power Macintosh**

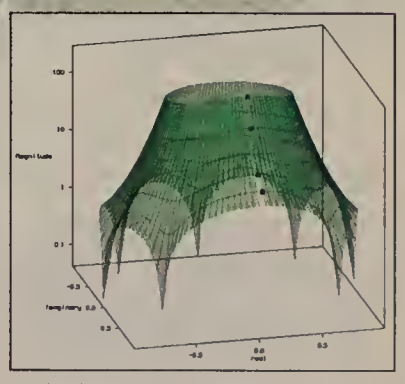
# HiQ®
## Real-World Math for Macintosh

**Notebook Interface**
- Interactive analysis and graphics in a WYSIWYG notebook interface
- Insightful 2D and 3D graphics
- Annotation for technical reports, journals, and presentations
- Publication-quality output

**Numerical Analysis Power**
- More than 600 math, scientific, and engineering functions
- Efficient algorithms with optimal convergence
- User-defined error tolerances

**Problem Solvers**
- Intuitive GUIs for solving sophisticated problems
- Automatic code generation

**HiQ-Script**
- A language built for scientists, engineers, and mathematicians



**Call for FREE demo, (800) 433-3488 (U.S. and Canada)**

**NATIONAL INSTRUMENTS®**
*The Software is the Instrument®*
6504 Bridge Point Parkway
Austin, TX 78730-5039
Tel: (512) 794-0100
Fax: (512) 794-8411

© Copyright 1994 National Instruments Corporation. All rights reserved. Product and company names listed are trademarks or trade names of their respective companies.

CIRCLE 500 ON READER SERVICE CARD

# IMAGERS®

Digital Output & Production

- Slides & Overheads
- Kodak *PortFolio* Services
- Dye-Sub Overheads/Prints
- Large Color Posters
- Canon Fiery Lasers
- Slide Duplication
- 4x5 Neg/Pos/B&W
- Economy Slides/$3.00

OVERNIGHT $4.95 Slides & Canons POSTSCRIPT

PhotoCD™ Scans $.90

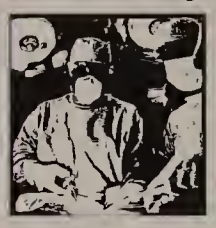
(800) 232-5411
22-7th St. • Atlanta, GA 30308 • 404-873-5353

CIRCLE 456 ON READER SERVICE CARD

**You've tried Norton™, You've tried MacTools™ & Still No Data!**

**CPR&RS,** will go where no software utilities has gone before! With state of the art techniques & proprietary software **CPR&RS,** will surgically remove your data, without the hassle of filling out any unnecessary forms.

**CPR&RS,** services are recommended by most Major Hard Drive Manufacturers, System Manufacturers as well as the U.S. Dept. of Defense. We have a 98% Success rate on all Storage Devices & Operating Systems.



**CPR &RS, Inc.**

Computer Peripheral Repair & Recovery Services, Inc.
11440 Okeechobee Rd. Suite 201
Royal Palm Beach, FL. 33411
800-765-9292
407-795-7266

CIRCLE 452 ON READER SERVICE CARD

"We tried all the utilities and nothing worked. Total Recall recovered 100% of our data and returned it the same day. These guys are amazing!" — *R.H. Dataviz, Inc.*

*"The Data Recovery Experts™"*

- Class 80 Clean Room
- 1-3 Day Service-No Extra Charge
- Better than 94% Success Rate
- Recommended by Major Manufacturers

**TOTAL RECALL™**
800.743.0594

**Absolute Data Recovery!** SINCE 1989

2440 Waynoka Rd. • Colorado Springs, CO 80915 • 719.380.1616 • FAX 719.380.7022

CIRCLE 458 ON READER SERVICE CARD

# DATA RECOVERY

- **Expertise in Macintosh** & virtually every operating system & storage device - including tape & removable media
- **24-Hour Worldwide Support** with on-site, weekend, and priority service
- **Professional Service Authorized** by major manufacturers

Ontrack Data Recovery — World Class Service

**Ontrack DATA RECOVERY®**

MN: 1-800-872-2599
CA: 1-800-752-7557

London: +44 (0)81 974 5522 • Germany: 0130-815-198 • France: 05 90 72 42
~ Ask about our referral programs ~

CIRCLE 459 ON READER SERVICE CARD

**$19.00!!!**
For all repairs plus parts and shipping. Maximum price guaranteed. Super fast turn-around. New and used hardware for sale. School orders welcome. Open 12 noon-5, 6:30-10pm eastern M-Sat. We buy dead Apples, Macs, PCs.
*Arminius Pubs. & Prods. Inc.*
*8519 Orchard Ave.*
*Merchantville, NJ 08109*
***609/662-3420***

# HIGH IN DEMAND

**DATA RECOVERY**

- High Success Rate
- Free Estimates
- No Recovery, No Fee
- 24 Hour Turnaround Available

415.588.DATA
▸MACINTOSH
▸POWER PC
▸DOS

HIGH IN DEMAND™
121 S. Maple Ave. Ste 9
South San Francisco, CA 94080
415.588.3282

CIRCLE 427 ON READER SERVICE CARD

# DIGITAL IMAGING

| | |
|---|---|
| Slides | $3.75 |
| 4x5 chromes/negs | $16 |
| Dye sub print/overhead | $18 |
| Hi Res Scanning | $10 |

*Quantity Duplication on Slides and Overheads*

**Show & Tell**
39 W. 38th St., NY, NY 10018
212 840 2912 • 212 840 7953 (fax)

CIRCLE 550 ON READER SERVICE CARD

Macworld Shopper section offers a great **FOUR COLOR** format to bring your ad to life.

Macworld SHOPPER

# MICRODOC

**Macintosh Computer Repair**

- Component level repair in less than 48 hours.
- We stock hard to find & custom parts.
- Same day parts shipping & most repairs.
- Telephone tech support on repair kits.
- Complete price list available upon request.
- School and corporate P.O. accepted.
- Dealers/Servicers only.

*Serving the service industry since 1983—with great prices on parts and repairs.*

**CHECK OUT OUR PRICES**

**REPAIR PARTS**
Exact replacement CRT:3 @$50
Exact replacement mouse cables
Complete analog repair kit with docs
Hard drive power supply from $49
Circuit board ICs, fuses & filters

**LOGIC BOARD REPAIRS**
LaserWriterII NTX - $199
MacII, SE, Classic, & Plus - $99
MacIIX, CX, SI, & ClassicII - $119
MacIICI, FX, & Quadra 700 - $179
Powerbooks from $119
**Floppy drive repairs 800/1.4 - $69/$99**

Prices are subject to change

**1040 Tyinn #7/Eugene, OR 97402/(503) 344-5335/FAX (503) 344-5020**

CIRCLE 482 ON READER SERVICE CARD

# LIMITED ADVERTISING BUDGET?

Macworld Shopper offers a great way to reach 550,000 active shoppers.

Macworld SHOPPER

## MAC REPAIR

Mac Shop Northwest

- Apple™ Certified Technicians
- One-Day Service Turnaround*
- Hard Disk Repair & Data Recovery
- Up to 75% below Dealer Rates
- Component-Level Repairs
- Expert Advice and Prices by Phone
- Power Supplies & Logic Boards
- Lifetime Repair Warranty*

Tel: 1-503-642-3456

*on many repairs. Visa/MC/AX. Fast overnight shipping available. We use genuine Apple™ parts.

FEDERAL EXPRESS

**1-800-MAC-SHOP**

CIRCLE 515 ON READER SERVICE CARD

## THE ULTIMATE BBS

**FREE ACCESS**

**NO CREDIT CARD NEEDED**

- Talk with Singles/Couples
- Over 100,000 GIF, Shareware, Windows/DOS Files — updated daily!
- Unlimited Downloads • Call NOW!

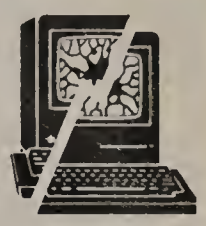
**USE YOUR MODEM TO DIAL**

**1-809-474-1197**

Callers must be 21 or older! Long distance rates apply.

SAFEWARE

## Insures Your Computer



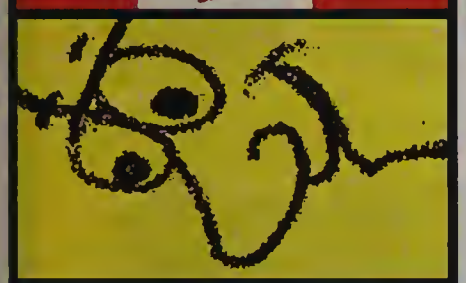
The Computerowners℠ Policy insures you against theft, fire, accidental damage, lightning even power surge! Replace or repair for $49 a year. Available in the U.S. & Ontario.

**1-800-800-1492**

SAFEWARE, The Insurance Agency Inc.
2929 N. High St., PO Box 02211
Columbus, OH 43202

CIRCLE 522 ON READER SERVICE CARD

Macworld SHOPPER



HOT SHOPPER PRODUCT CATEGORIES **HELP BUYERS FIND THE PRODUCTS** THEY NEED FAST.

Chromascript & Forte

NOW AVAILABLE! Iris & 3-M Rainbow Prints Overnight and Economy Service

Experts in Mac/PC Imaging

Now Imaging 4x5

Starting at $3.50 per slide

Free Shipping*

NEXTWAVE PRODUCTIONS™

24 hr BBS
24/72 hr service
Volume discounts
3–5 hr Immediate svc.
High volume slide duplication
Scanning and production services
*Call for Info

MasterCard VISA AMERICAN EXPRESS

**212/989 2727 800/445 9002**

CIRCLE 488 ON READER SERVICE CARD

## HUGE

POSTSCRIPT FILM OUTPUT UP TO 29"x 43"

*Plus*

- **HIGH RESOLUTION DRUM SCANS, TO FILM OR DISK**
  ON HELL 3010 DIGITAL SCANNER
- **COMPLETE HIGH-END SYSTEM & MAC CAPABILITIES**
  RETOUCHING, CLONING, OUTLINING, IMAGE & COLOR MANIPULATION, PAGE ASSEMBLY
- **PROOFING**
  MATCHPRINT, CROMALIN OR DIGITAL RAINBOW
- **STOCHASTIC SCREENING**
  LINOTYPE-HELL DIAMOND SCREENING

*Put our extensive electronic pre-press experience to work for you*

SPECTRUM WEST, INC.
COMMUNICATION THROUGH COLOR

SPECTRUM WEST, INC.
15500 S.W. JAY ST.
BEAVERTON, OR 97006
PHONE: 503-626-2430
FAX: 503-626-2429
MODEM: 503-671-0774
1-800-444-0045

CIRCLE 560 ON READER SERVICE CARD

## Notebook Thefts Skyrocket!

**Why Take the Risk?**

*NOW "Insurance to Go"℠*

| The Risks | The Insurance |
|---|---|
| Theft - Fire | Premiums Start at |
| Power Surge - Lightning | $60 a Year |
| Earthquake - Accident | |

**1-800-722-0385**

**The Computer Insurance Agency, Inc.**
6150 Old Millersport Rd. NE • Pleasantville, OH 43148

CIRCLE 523 ON READER SERVICE CARD

We can scan your 35MM slides & negs onto Photo CD

*24 Hr Turnaround*

Photo CD™

as low as **60¢** an image

**1-800 WRITE CD**

800-974-8323

CIRCLE 502 ON READER SERVICE CARD

OVER **1/2 MILLION** ACTIVE BUYERS **FIND WHAT** THEY ARE **LOOKING FOR** *IN THE* **MACWORLD SHOPPER** SECTION.

Macworld SHOPPER

**"If it hadn't been for DriveSavers, our information would have been lost forever."**
–S.S., Sebastopol

DRIVESAVERS® DATA RECOVERY

As the only all-Mac data recovery company, we've saved more megabytes of Mac data than anyone else in the world. We're certified by every Mac drive manufacturer. Our proprietary techniques are so advanced we can rescue data others might simply abandon.

**1-800-440-1904**

Restoring data–and peace of mind–since 1989

400 BEL MARIN KEYS BL. • NOVATO, CA 94949 • FAX: 415-883-0780 • PH: 415-883-4232

CIRCLE 510 ON READER SERVICE CARD

# Guaranteed lowest prices every day!

## THE BEST DEAL IN CLIP ART

# CLIP ART CD

*"I have purchased over 15 different clip art collections, and yours is truly the best!"*

—*Scott Goldstein*

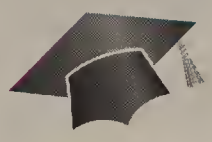
- Over 1200 high quality curriculum-oriented images, borders, and more!
- 20 different categories
- Pictorial Index & Catalog included
- PICT & EPS formats
- Easy-to-use
- 30 Day Money Back Guarantee
- Preferred choice of educators

**ONLY $49.95**

Also available on 3.5" diskettes. Ask for details!

ANIMAL TRACKS

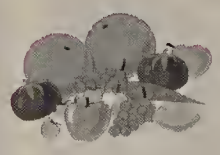
ANIMALS


AWARDS

BACKGROUNDS/BORDERS

DINOSAURS

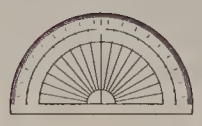
FANTASY


FOOD

HOLIDAYS

INDUSTRIAL ARTS

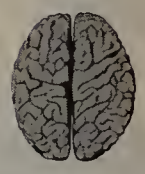
MAPS


MATH

MUSIC

PLANTS

SCHOOL


SCIENCE

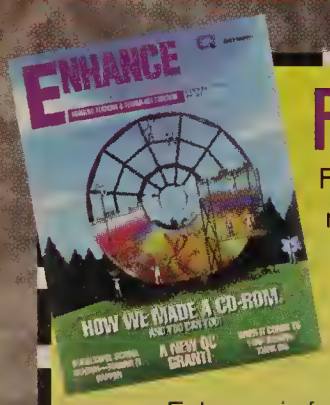
SEA LIFE

SPACE

SPORTS

SYMBOLS

TECHNOLOGY




## FREE EDUCATIONAL CATALOG

Find out why Enhance is America's favorite journal & catalog of educational technology. Every year, over a million educators look to Enhance for grant writing tips, technical advice, product reviews, and now, to read how they can best meet the challenges of **Goals 2000.** Enhance is free! Call today, or clip and mail this order form.

Name _____

Address _____

City _____ State _____ Zip _____

Phone ( _____ ) _____

Occupation: ❑ Educator ❑ Other _____

Title _____

**QUALITY COMPUTERS**

MacWorld Quality Computers • 20200 Nine Mile Rd. • St. Clair Shores, MI 48080

## ORDER NOW AND GET

# BONUS CD

## WITH EVERY ORDER

*The Q-ROM*

*Software Demos • Educational Games*

*Entertainment Games • Fonts*

*QuickTime Movies • Clip Art • Much more!*

*Find out what makes Quality Computers the leader in Educational Technology across America!*

# Educator's Shopping Guide!

FREE CD-ROM W/EVERY ORDER!

## CD-ROMS

**BRODERBUND**

Arthur's Teacher Trouble ..... 34.95
Carmen World Deluxe ..... 49.95
Just Grandma & Me ..... 34.95
Myst ..... 47.95
New Kid on the Block ..... 34.95
Tortoise and the Hare ..... 34.95

**DISCIS BOOKS—CLASSROOM VERSIONS**

Aesop's Fables ..... 24.95
Cinderella ..... 24.95
Mud Puddle ..... 24.95
Scary Poems for Rotten Kids ..... 24.95
Tale of Benjamin Bunny ..... 24.95
Tale of Peter Rabbit ..... 24.95
Thomas' Snowsuit ..... 24.95

**ORANGE CHERRY NEW MEDIA**

20,000 Leagues Under the Sea ..... 39.95
Adventures of Pinocchio ..... 39.95
Beauty and the Beast ..... 39.95
Talking Classic Tales ..... 39.95
Talking Jungle Safari ..... 39.95
Time Traveler ..... 59.95
Wind in the Willows ..... 39.95

**SOFTWARE TOOLWORKS**

Capitol Hill ..... 29.95
Dceans Below ..... 29.95
San Diego Zoo: The Animals! ..... 39.95
Space Shuttle ..... 29.95
U.S. Atlas v.3.0 ..... 39.95
World Atlas 3 Multimedia ..... 39.95

**TIMEWORKS**

Publish It! Easy 3.0 ..... 49.95

**WAYZATA**

CD-Fun House ..... 24.95
World Factbook ..... 24.95

## SOFTWARE

**BRODERBUND**

Carmen America's Past ..... 29.95
Carmen Space ..... 39.95
Carmen Time ..... 29.95
Carmen World ..... 19.95
Kid Pix 2 ..... 34.95
Print Shop Deluxe ..... 47.95
Spelunx/Caves of Mr. Seudo ..... 28.95
The Backyard ..... 29.95
The Playroom ..... 29.95
The Treehouse ..... 29.95

**CLARIS**

ClarisWorks Competitive Upgrade ..... 89.95
FileMaker Pro Upgrade ..... 89.00
MacWrite Pro Upgrade ..... 69.00

**DAVIDSON**

Kid Works 2 ..... 34.95
Math Blaster Mystery ..... 29.95
The Cruncher ..... 34.95
Zoo Keeper ..... 34.95

**EDMARK**

Bailey's Book House ..... 28.95
KidDesk ..... 24.95
Millie's Math House ..... 28.95
Thinkin' Things ..... 32.95

**INTUIT**

Quicken ..... 44.95

**LAWRENCE PRODUCTIONS**

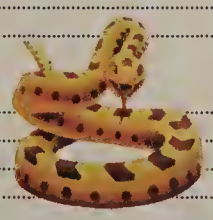
Discovering America ..... 34.95
Nigel's World ..... 27.95
The Lost Tribe ..... 29.95

**LEARNING COMPANY**

Bilingual Writing Center ..... 169.95
Math Rabbit 1 ..... 34.95
Math Rabbit 2 ..... 34.95
Reader Rabbit 1 ..... 34.95
Reader Rabbit 2 ..... 34.95
Reader Rabbit's Ready for Letters ..... 34.95
Super Solvers Midnight Rescue ..... 34.95
Super Solvers Dutnumbered ..... 34.95
Super Solvers Spellbound ..... 34.95
The Writing Center ..... 49.95
Treasure Math Storm ..... 34.95

**MAXIS**

SimCity 2000 ..... 39.95
SimEarth ..... 29.95
SimLife ..... 29.95



**MECC**

Amazon Trail ..... 34.95
DinoPark Tycoon ..... 34.95
My Dwn Stories ..... 29.95
Odell Down Under ..... 34.95
Oregon Trail ..... 28.95
Super Munchers/Number Munchers Bundle ..... 29.95
USA Geograph ..... 28.95

**MICROSOFT**

Creative Writer Academic ..... 39.95
Fine Artist Academic ..... 39.95
Microsoft Word Academic ..... 84.95
Microsoft Works Academic ..... 99.95

**QUALITY COMPUTERS**

SmartStart ..... 49.95
SmartStart Pro Version ..... 79.95
SmartVoice ..... 49.95

**ROGER WAGNER**

HyperStudio 2.0 ..... 109.95

**SYMANTEC**

Norton Utilities 2.0 Academic ..... 59.95
SAM 3.5 Academic ..... 39.95

**TIMEWORKS**

Publish It! Easy 3.0 ..... 49.95

**WEEKLY READER**

Stickybear's Early Learning Activities ..... 34.95
Stickybear Math Town ..... 34.95
Stickybear's Reading Room ..... 34.95

## HARDWARE

**CAERE**

OmniScan ..... 299.95

**DIGITAL VISION**

ComputerEyes (B&W) ..... 199.95
ComputerEyes (Color) ..... 299.95
ComputerEyes RT ..... 399.95

**HEWLETT PACKARD**

ScanJet IIcx ..... 949.95
ScanJet IIp ..... 499.95

**LAPIS TECHNOLOGIES**

LTV LV ..... 279.95
LTV Portable ..... 279.95

**LOGITECH**

FotoMan Plus ..... 549.95

**QUALITY COMPUTERS**

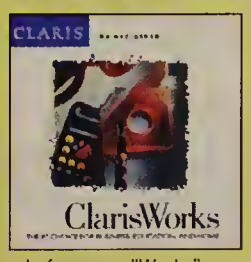
Q Drive 60 MB ..... 199.95
Q Drive 170 MB ..... 349.95
Q Drive 340 MB (Conner Mechanism) ..... 399.95

**SUPRA**

SupraFAXModem 144LC ..... 169.95

SPECIAL

### CLARISWORKS 2.1 COMPETITIVE UPGRADE




Upgrade from any "Works" program to ClarisWorks, the highly rated integrated Macintosh program. ClarisWorks features: Word Processing, Dictionary & Thesaurus, Multiple Column Layout, Text/Graphics Rotation, WYSIWYG Display, Import & Export, Spreadsheet, Database, Mail Merge, Communications and much more!

**$89.95**

SPECIAL • SPECIAL • SPECIAL • SPECIAL

## SPECIALS

**WHERE IN SPACE IS CARMEN SANDIEGO?**

**$39.95**

**OMNISCAN**

**$299.95**

**SUPRA FAX MODEM 144LC**

**$169.95**

**PRINT SHOP DELUXE**

**$47.95**

**SAN DIEGO ZOO: THE ANIMALS**

**$39.95**

**PUBLISH IT! EASY 3.0**

**$49.95**

**SUPER MUNCHERS/ NUMBER MUNCHERS BUNDLE**

**$29.95**

**WHO WE ARE.** Quality Computers has been a leader in the educational technology market for ten years. When we started, everyone used Apple II's. Today, schools are using more Macs and PCs. But no matter what kind of computers schools use, we will be there to provide their needs. Call for your free catalog and issue of our educational newsletter.

IF YOU DON'T SEE A PRODUCT THAT YOU NEED, CALL FOR OUR COMPLETE CATALOG

**WE WILL MEET OR BEAT ANY NATIONALLY ADVERTISED PRICE!**

MENTION CODE MW74 WHEN ORDERING

VISA · MasterCard · DISCOVER · Card

SCHOOL P.O.S BY PHONE, FAX OR MAIL

# 1-800-777-3642

Quality Computers™

20200 Nine Mile Rd. • St. Clair Shores, MI 48080 • 810-774-7200 • Fax 810-774-2698

# The cutting edge of Mac technology!

# SMARTVOICE

## *Give your Mac a clear, natural voice with SmartVoice*

- Reads any text in any program
- Add speech to your favorite word processor
- Great for proofreading—find out how your writing REALLY sounds
- Works in the background so you can work while your Mac reads
- Comes with 14 unique voices, a talking computer psychiatrist, talking text editor, talking clock, talking calculator, and more fun extras
- Uses Apple's new PlainTalk™ technology
- Comes bundled with Apple's SpeechManager™, MacinTalk 2™, and MacinTalkPro 2™*
- High-quality synthesized speech with realistic inflection and tone
- Speaks notification boxes from the Finder

**SmartVoice .....49.95**

MORE FUN & POWER

## SPEECH BONUS PACK

**MENTION THIS MACWORLD AD AND RECEIVE ANOTHER GREAT DEAL ON OUR SPEECH BONUS PACK!**

INCLUDES:

- An incredible digital "tape recorder" that allows you to transcribe hours of letters and memos to yourself (or your secretary) on your Mac. Then play them back while you're typing in any word processor! Start, stop, and rewind instantly—far better than any conventional tape recorder! You can store hours of recordings (limited only by hard drive space). Imagine what PowerBook owners can do with this technology!
- Azile—a vile-tongued talking psychiatrist with an attitude. Match wits and insults as Azile gives you absolutely no help at solving your petty personal problems. Its animated talking head will "mouth" the words from your Mac!
- Almost 3 MEG of full electronic text versions of famous novels, including Star Wars, Alice In Wonderland, The Gettysburg Address, and more. Let SmartVoice read this material to you or your children. Or just plain read it, print it, fax it, e-mail it, even rewrite it! Welcome to the future.

Because of the incredible amount of material in the Speech Bonus Pack, we normally sell it for $89.95. But if you order SmartVoice, you can get the Bonus Pack for ***$29.95*** Just mention this ad when ordering!

MENTION CODE MW74 WHEN ORDERING

SCHOOL P.O.S BY PHONE, FAX OR MAIL

**FREE CD-ROM W/EVERY ORDER!**

# 1-800-777-3642

Circle 263 on reader service card

**Quality Computers** ™

20200 Nine Mile Rd • St. Clair Shores, MI 48080 • 810-774-7200 • Fax 810-774-2698

# CD-ROM EXPLOSION!

**FREE EXPRESS SHIPPING**
Free express shipping on products marked with ✈

**FREE CATALOG—OVER 750 TITLES IN STOCK**
We'll BEAT any advertised price on CD-ROM Products! (some restrictions apply)

## GAMES

**Spaceship Warlock #D1583**
**$19.95** (MSRP $95)
- Offer valid with purchase.
- Limit 1 per customer.
- While supplies last.

| | | |
|---|---|---|
| 50135 | 7th Guest | $59.95 |
| GB1 | Action, Aliens, Astronauts - 3CDs Lunicus, Jump Raven, Space Shuttle | 79.95 |
| 1467 | Better Dead | 49.95 |
| 50027 | Chaos Continuum | 29.95 |
| 50390 | Critical Path | 49.95 |
| 50149 | Darkseed | 44.95 |
| 50450 | Flying Nightmares | 44.95 |

**GameROOM✈ #D1611**
1,000 Shareware games.
**$19.95** (MSRP $39.95)
Limited time offer.

| | | |
|---|---|---|
| 1476 | Hell Cab | 45.95 |
| 2084 | Iron Helix | 59.95 |
| 2068 | Journeyman Project | 49.95 |
| 50066 | Jump Raven | 44.95 |
| 50080 | Manhole Masterpiece | 34.95 |
| 50107 | Myst | 54.95 |

**Midnight Stranger✈ #50316, $59.95**
"This is a landmark product that should be in the Smithsonian Institution." *Glenn Collyer, SFSU*
Adults Only. A strange night out in a gritty urban environment. The fist CD to employ Virtual Intimacy. Free headphones!

| | | |
|---|---|---|
| 50438 | Rebel Assault | 49.95 |
| 50439 | Spectre VR | 49.95 |
| 50375 | Tetris Gold | 39.95 |
| 1960 | Who Killed Sam Rupert? | 19.95 |
| 50346 | Wrath of the Gods | 46.95 |

## GENERAL

**I Photograph To Remember #D1774**
**$9.95** (MSRP $39.95)
Limited time offer.

| | | |
|---|---|---|
| 1300 | EDUCORP Shareware✈ | 149.00 |
| 1642 | Family Doctor | 47.95 |

## ENTERTAINMENT/GENERAL

| | | |
|---|---|---|
| 50291 | Movie Select | $37.95 |
| 50403 | Maus | 37.95 |
| 1470 | How Computers Work | 53.95 |
| 50104 | American Visions | 69.95 |
| 50311 | Art Gallery | 59.95 |
| 50420 | Cooking To Seduce | 27.95 |
| 50319 | Freak Show | 48.95 |
| 50079 | Great Golf | 52.95 |

**Baseball's Greatest Hits #D1771**
**$12.95** (MSRP $79.95)
Limited to stock on hand.

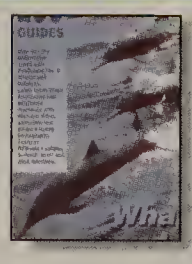
**Sports Illustrated Sports Almanac '91 #D1948**
**$14.95** (MSRP $59.95)
Limited to stock on hand.

| | | |
|---|---|---|
| 2095 | A Hard Day's Night | 27.95 |
| 50343 | MacCocktail | 39.95 |
| 50291 | Movie Select | 37.95 |
| 50313 | Musical Instruments | 59.95 |
| 1909 | You Want To Be/Rock Star | 37.95 |
| 50321 | Society Of Mind | 34.95 |
| 50296 | Virtual Tarot | 44.95 |
| 50125 | Wines of the World | 49.95 |

## EDUCATION & BUSINESS

**Multimedia Encyclopedias**
"...wonderful...excellent ...fun!" *Sweetwater Union H.S.*
Designed by biologist Rob Ransom Ph.D., a MacUser Eddy award-winner for Best Database Resource. Features include a unique easy-to-use interface, export text, photography, video, expert narration and search by keyword or key phrase.

| | | |
|---|---|---|
| 50110 | Encyclopedia of Dino✈ | 49.95 |
| 1280 | Encyclopedia of Life✈ | 64.95 |

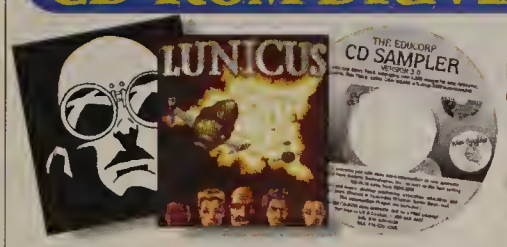


**ZooGuides Series**
"...a series of beautiful interactive zoo discs." *MacUser Magazine*
Each volume is designed and written by Rob Ransom, PH.D. Each volume includes full motion video, expert narration, animation, photography, distribution maps, and a guide to families and species.

| | | |
|---|---|---|
| 2081 | Butterflies of the World | 39.95 |
| 1275 | Mammals of Africa | 39.95 |
| 50300 | Rainforest | 39.95 |
| 1210 | Whales & Dolphins | 39.95 |

| | | |
|---|---|---|
| 1896 | Berlitz Think/Talk Span. | 123.95 |
| 50310 | Encarta | 99.95 |
| 1770 | Great Literature | 48.95 |
| 50037 | History of the Blues | 29.95 |
| 1333U | Grolier Encyclopedia | 99.00 |
| 50399 | JFK - Historymaker | 37.95 |
| 1460 | Mayo Clinic Health Bk | 49.95 |
| 1768 | Monarch Notes | 49.95 |
| 50246 | Phonedisc Reverse | 149.95 |
| 50345 | Random House Dict | 59.95 |
| 50122 | Redshift MM Astronomy | 57.95 |
| 2090 | Small Blue Planet | 59.95 |
| 50317 | Street Atlas USA | 97.95 |
| 50419 | Time Almanac | 67.95 |
| 50414 | Total History! | 74.95 |
| 1785 | A View From Earth | 29.95 |

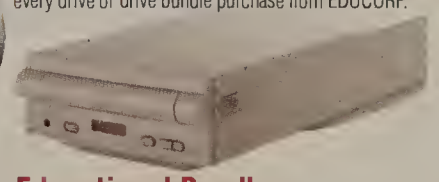
## CD-ROM DRIVES & BUNDLES




**3 Free CDs with drive or bundle!**
Free Lunicus, Mister X and the EDUCORP CD Sampler with every drive or drive bundle purchase from EDUCORP.

| Part # | CD-ROM Drive | Alone | Bundle |
|---|---|---|---|
| 1824 | CD Tech | $479.00 | 699.00 |
| 945 | Nec 3Xe | 467.00 | 799.00 |
| 944 | Nec 3Xp | 399.00 | 639.00 |
| 978 | Pioneer | 1,299.00 | 1,499.00 |
| 5028 | Plextor | 429.00 | 649.00 |

**Add an "A" in front of part # for the bundle.**



**Educational Bundle**
Bundle Includes drive, 12 educational CD-ROM titles, speakers, stereo headphones, cable, driver software and power supply. Titles included are • Grolier's Encyclopedia • World Atlas • U.S. Atlas • Big Green Disc • Think for Yourself • Dictionary of the Living World • Mayo Clinic Family Health Book • Shakespeare • Sherlock Holmes • Audubon's Bird of America • Audubon's Mammals

**More bundles available, call.**

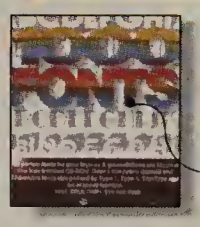
## KIDS

| | | |
|---|---|---|
| 1924 | ABC Songbook✈ | $14.95 |
| 2078 | Animal Alphabet | 29.95 |
| 1667 | Benjamin Bunny | 19.95 |
| 50348 | CD-ROM Coloring Bk | 24.95 |
| 50398 | Forever Growing Garden | 37.95 |
| 50405 | Gus Goes to Cybertown | 37.95 |
| 1850 | Just Grandma & Me | 39.95 |
| 50436 | Kid's Studio | 39.95 |
| 50302 | Peter Pan Adventure | 39.95 |

**Kids Room✈ #D1614**
**$9.95** (MSRP $19.95)
Limited time offer • 1 per customer.

| | | |
|---|---|---|
| 50109 | The Tortoise & The Hare | 39.95 |
| 50306 | Willy Wabbit Magic Bks | 32.95 |
| 1962 | Word Tales | 27.95 |

## DTP Desktop Publishing



**1000 Fonts✈ #D2067**
Over 1,000 Shareware & PD fonts.
**$19.95** (MSRP $39.95)
Limited time offer.

| | | |
|---|---|---|
| 1690 | Aviation Photo Disc✈ | 23.95 |
| 50048 | Best of People/Bus*✈ | 79.95 |
| 1298 | Creative Bkgnds/Tex*✈ | 49.95 |
| 50073 | Design Toolkit Pro✈ | 79.95 |
| 50329 | Clip Art Sampler✈ | 9.95 |

**Swimsuit v.1✈ #D1595**
200 royalty-free stock photos
**$19.95** (MSRP $79.95)
Limited time offer.

| | | |
|---|---|---|
| 50150 | Essential Bckgds/Tex*✈ | 49.95 |
| 50141 | Font Frontier✈ | 39.95 |
| 1680 | Graphtec G. Designs✈ | 49.95 |
| 1686 | Kids Stock Photos✈ | 64.95 |
| 1696 | Nature's Way✈ | 49.95 |
| 50204 | Pro. Backgrounds*✈ | 64.95 |
| 1444 | ProPhoto.Collection*✈ | 54.95 |

***These titles are in Kodak Photo CD Format.**
The Kodak Photo CD Logo is a trademark used under license.

**THE MULTIMEDIA PIONEER℠** Prices subject to change without notice. Dealer inquiries welcome.

# EDUCORP® 1-800-843-9497

**FREE CATALOG! W28** 7434 Trade Street ■ San Diego, CA 92121-2410 ■ Info: 619-536-9999 ■ FAX: 619-536-2345
Foreign customers send $4 p/h. With any purchase you'll get EDUCORP's informative newsletter free.

**EDUCORP WILL BEAT ANY ADVERTISED PRICE ON CD ROM PRODUCTS**

**Circle 157 on reader service card**

WISE GUY

BY GUY KAWASAKI

# Guy's Guide to Creativity

*Lessons from the genius awards*

OF ALL THE QUESTIONS THAT people ask me, the one I dread most is, "You were on the Macintosh team; where did that incredible creativity come from?" I was on the Macintosh team, and it was an incredibly creative group of people, but I wasn't one of the creative ones. I just worked hard. I have searched for years for an explanation of the creative process. At first I thought the answer was to copy Xerox PARC. Then I thought the answer was to listen to Steve Jobs. Then I thought it was to do the opposite of what John Sculley tells you. Now I've got it figured out: it's to read *Uncommon Genius—How Great Ideas Are Born*, by Denise Shekerjian ($11, 1990, Penguin Books, 201/387-0600, 800/253-6476).

## The MacArthur Awards

*Uncommon Genius* examines the work methods of 40 winners of the John D. and Catherine T. MacArthur Foundation fellowship (the so-called genius award). The foundation was set up by John D. MacArthur. He was the Bill Gates of his day; he owned Bankers Life and Casualty—at the time the second-largest life and accident insurance company in the world—and enormous landholdings in Florida.

At his bequest, most of his $2.5 billion estate went to create a foundation that was second in assets only to the Ford Foundation. One aspect of the MacArthur Foundation's work is to encourage risk-taking and forward thinking, so each year the foundation gives about $9 million in awards.

A secret committee of about 100 experts, from a wide range of fields, nominates people. One cannot apply for the award. Armed with nominations, the foundation's staff further examines the work of potential winners.

If you are selected, the foundation calls you out of the blue and tells you that you've won. Winning means you get $30,000 to $70,000 a year for five years. The purpose of the money is to catalyze quantum leaps in creativity by providing financial freedom. There are no strings attached; you can do whatever you want with the money.

## Lessons in Creativity

Most books about creativity are cuties with exercises, brainteasers, and cartoons (like *The Macintosh Way*). They're supposed to tickle you into creativity. Then there's Shekerjian's book. It is a complete, radical, and welcome departure from any book I've ever read about creativity.

*Uncommon Genius* has 14 chapters, each explaining one aspect of creativity by examining how MacArthur award winners do their thing. Award winners are not limited to the arts or a narrow concept of creative fields. For example, Shekerjian writes about a woodworker, an environmentalist, a translator, and a neurophysiologist (you're probably as amazed as I am that there's no HyperCard programmer on this list).

The main point of the book is that creativity is not a brilliant flash from heaven after the clouds part. Shekerjian found that the MacArthur award winners find something they're good at and work at it for years, take risks because risks are part of change, and endure years of uncertainty and frustration. Truth be known, this is an accurate description of how Macintosh was created.

Two pearls of wisdom in *Uncommon Genius* will strike at the heart of any Macintosh owner.

Pearl one: "There are no secrets, no inside easy steps that everybody hopes for. We all want to find the secrets, but they just don't exist," says MacArthur award winner Shirley Brice Heath, anthropological linguist.

Have you ever had a friend or relative who buys his or her first Macintosh, takes it home, sets it up, and expects to be the world's greatest graphic artist—or writer or businessperson—in an hour? You have? Then you know what Shirley's talking about.

Pearl two: "I don't get too excited by my victories or too disappointed by my defeats, and in that way I come closer to peace of mind and that deep inner place that creativity comes from," says award winner Michael Lerner, social scientist.

Does Apple's whipsaw management style drive you crazy? One day the company is arrogantly crowing that it's introduced a new computer. The next day it lays off 2000 employees because earnings per share are down for the quarter.

*Oy vey.* If we could only get Apple execs to listen to Michael. Apple is completely dependent on creative products, so it needs to cultivate a "deep inner place" in order to survive.

## The Close

Buy this book. It'll help foster greater creativity in everything you do with your Mac. And more important, I won't have to try to explain creativity anymore. m

GUY KAWASAKI's views are his own and only sporadically represent those of *Macworld*. His latest book is *Hindsights* (Beyond Words Publishing, 1994). He has investments in Bit Jugglers, Global Village Communication, Bookmaker Corporation, and others. He can be reached at Kawasaki@radiomail.net.

LOURDES LIVINGSTON

## Introducing the MultiSync® Value Series Monitors. The affordable solution for those who make your business run.

They're the people you count on to get the job done. From secretaries to shipping, they need all the help you can give them. Luckily, the 15" (13.8" diagonal viewable area) MultiSync® 3V and the new 14" (13" diagonal viewable area) MultiSync 2V work with the latest Macs and give you the great colors and sharp display you'd expect from NEC. They support multiple resolutions and let you switch between them with NEC's DPI-on-the-Fly® software. You also get a monitor that's MPR II compliant and has a 3-year limited warranty. It's more than you'd expect at such a great price. But then again, you're probably used to getting the most for your money. Questions? Call 1-800-NEC-INFO. Or, for information via fax, call 1-800-366-0476 and request our Mac products catalog #4. **The easiest monitors to live with for hours and hours: Ours.**

MultiSync 2V

NEC

Optional cable adapter required for Macintosh connection and DPI-on-the-Fly software available free from NEC. MultiSync is a registered trademark of NEC Technologies, Inc. The Energy Star emblem does not represent EPA endorsement of any product or service. ©1994 NEC Technologies, Inc.

**Circle 16 on reader service card**

**Ten hours per day.**
**One hundred and thirty words per minute.**

**Fifteen hours today.**
**Sixty-five overnight packages. Tonight.**

# The first trackball in awards is first in something even more important.

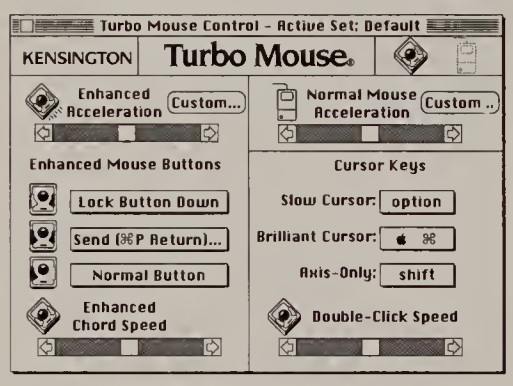
# Comfort.

*MacUser* gave it the coveted Five Mice. The readers of *Macworld* voted it "Best Input Device" five times. It has won more awards than any Macintosh input device in history.

What makes Turbo Mouse the number one choice in input devices?

**Move the ball. Click the buttons. Feel the difference.**

Turbo Mouse is more comfortable than an ordinary mouse. Its superior trackball design




means less hand and arm movement: you move only the ball, not the entire device.

And it's more comfortable than an ordinary trackball. A unique combination of hardware and software make the difference.

Turbo Mouse has a large comfortable ball that rests on high-quality stainless steel bearings. The movement is ultrasmooth. Precise.

The buttons are also more comfortable. They are oversized, well-positioned and easy to click. Your fingers don't have to stretch as much. There is less fatigue after a day's work.

**Program the buttons. Jump to HotSpots. Save unnecessary movements.**

The other part of the comfort story is our unique, programmable software. It allows you to automate the functions you use most often.

Program one button as a double-click to open files and programs instantly.

Program another button to avoid holding down the button when dragging objects. Or program a button to slow the cursor down, lock on an axis or send keyboard macros. And our new Brilliant Cursor® technology even allows you to jump to predefined HotSpots onscreen, like the icons in a toolbar or palette.

And Turbo Mouse automatically remembers which application you're in. So you can program different command combinations for each application.

It all adds up to less repetitive motion. Less wasted energy. Less stress.

**Kensington Satisfaction Guarantee**

Turbo Mouse 4.0 comes with on screen help, two ADB ports for chaining and is fully System 7 compatible. Our unique Satisfaction Guarantee includes a 5-year warranty, toll-free technical support, and a no risk 60-day trial. For information, call 800-535-4242. Outside the US, 415-572-2700. For information by fax, call and enter 82 and request document #323.

## Turbo Mouse® 4.0

KENSINGTON

Brilliant Cursor, Turbo Mouse and Kensington are registered trademarks of Kensington Microware Limited. © 1993 Kensington Microware Limited 12/93